

AD-A132849

# DEPARTMENT OF DEFENSE

Joint Test Director

Joint Logistics Over-The-Shore II

Test and Evaluation



DTIC  
ELECTED  
S SEP 20 1983  
A

Field Test Plan

Roll-On/Roll-Off Phase

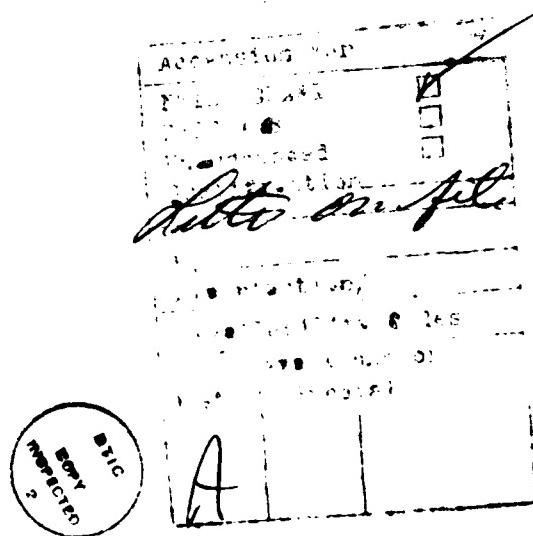
June 1983

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JLOTS II  
PHASE II ROLL ON/ROLL OFF  
FIELD TEST PLAN



6 June 1983

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## I. INTRODUCTION

### A. GENERAL

Joint Logistics Over-the-Shore II (JLOTS II) is a Department of Defense (DOD) sponsored Joint Test and Evaluation (JTE) Program. This program's purpose is to test the capabilities of the Services to deliver logistic support from merchant ships to forces ashore in objective areas where there are no usable port facilities. The systems being operationally evaluated are components of the Navy's Amphibious Logistics System (ALS), the Marine Corps Field Logistics System (FLS), and the Army's Logistics Over-the-Shore (LOTS) System. The test program is divided into three phases: Phase I, the Deployment Test, will evaluate the capabilities of the Services to deploy their logistics delivery systems in merchant ships to any objective area. Phase II, the Roll-On/Roll-Off (RO/RO) Test, will evaluate the capabilities of the Services to utilize ramps, platforms and lighterage that permit the off-shore discharge of RO/RO ships. Phase III, the Throughput Test, will evaluate the capabilities of the Services to install and operate their delivery systems for container, breakbulk, and bulk POL cargo. This test plan covers Phase II, which includes the loading of selected wheeled and tracked vehicles on two types of RO/RO ships.

and off-shore discharge of these vehicles via a RO/RO Calm Water Offload Facility and selected lighterage.

B. BACKGROUND

The bulk of the wheeled and tracked vehicles required by forces involved in a land campaign will be transported to the theater of operations by civilian merchant ships designed specifically for carrying vehicles. These Roll-On/Roll-Off (RO/RO) ships, as they are called, normally do not load and offload their vehicles off-shore but require modern port facilities which may not exist in developing regions of the world. In other areas where adequate facilities exist, these facilities may be denied through the strategic or tactical actions of a land campaign. Consequently, the Services have developed equipment for unloading these ships offshore and transporting their vehicles across the shoreline to inland locations.

(1) Previous Testing

In the summer and fall of 1982, the Naval Facilities Engineering Command (NAVFAC) under Chief of Naval Operations (CNO) Project Number 299, Container Offloading and Transfer System (COTS) conducted tests of methods for offloading

military cargo from RO/RO merchant ships. Technical program development and test direction were provided by the David W. Taylor Naval Ship Research and Development Center (DTNSRDC) and the Naval Civil Engineering Laboratory (NCEL). Developmental tests were conducted with the MS CYGNUS which demonstrated the viability of the RO/RO Discharge Facility concept for both offloading and backloading of self-sustaining RO/RO ships in an off-shore setting. The test encompassed the assembly, installation, and operation of the RO/RO Discharge Facility, as well as the offloading and retrograde of vehicles using causeway ferries and LCU's.

(2) JLOTS II Charter

In February 1981, the Under Secretary of Defense (Research and Engineering) approved testing of JLOTS systems as the JTE Program JLOTS II. In December 1981, DDT&E, OSD, issued a JLOTS II Charter (Reference A) to the Joint Test Director (JTD) directing the conduct of tests to collect data for evaluation of the Services over-the-shore systems (LOTS, ALS, and FLS) by the JTD in January 1983. An approved test design (Reference B) was issued.

C. PHASE II TEST ITEMS

Figure 1.1 illustrates the Navy developed RO/RO Discharge Facility which is the central test item for this test. This facility consists of a rectangular platform made up of six Navy causeway sections, each nominally 21 ft x 90 ft (as shown in Figure 1.2), which have been connected end-to-end and side-to-side (using the connector system shown in Figure 1.3) to form a floating platform about 65 ft wide by 180 ft long. This platform is outfitted with mooring lines and a landing mat of dunnage to interface with the RO/RO ships with Integral Offloading Ramps.

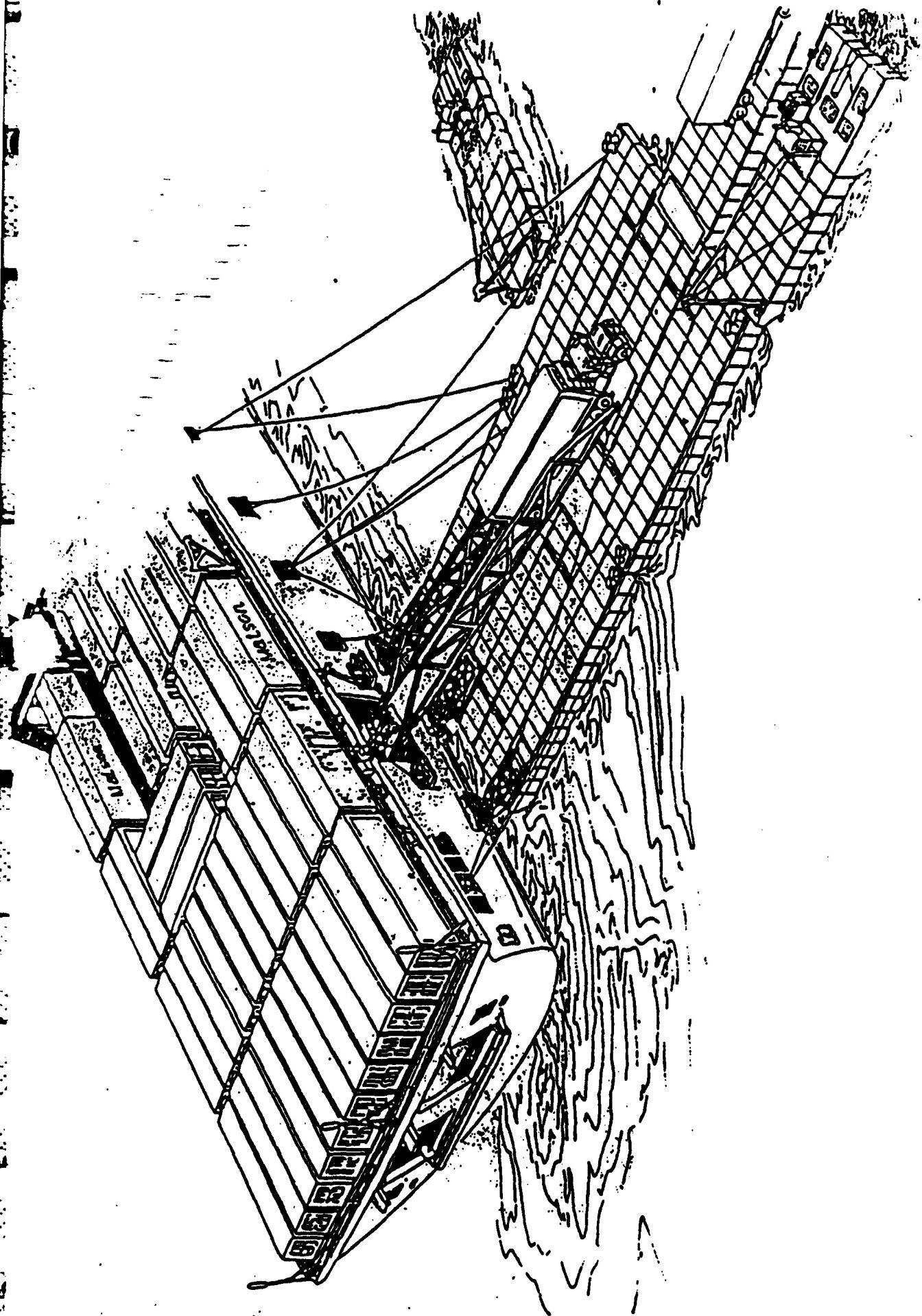
As will be discussed in detail in Chapter III, not all RO/RO ships carry their own ramp. Rather, some must depend on ramps provided at commercial pier facilities. For these ships, adjustable fenders, shown in Figure 1.4 and the ramp shown in Figure 1.5 are deployed with the discharge facility. The ramp is connected to the ship using the ship's winches and other interface hardware. The ramp consists of three 40 ft sections which are pinned and bolted together to give an overall length of 120 ft and a weight of 152,000 pounds. The ramp has a design load capacity of 134,000 pounds which accommodates the weight of the heaviest service vehicles. In addition, the ramp may be used in an 80 ft configuration for pier side operations.

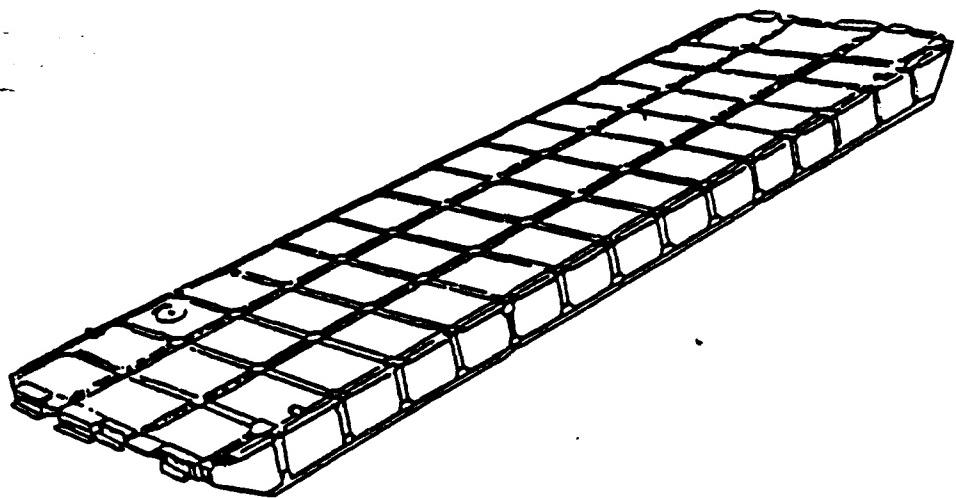
Figure 1.6 illustrates the Navy warping tugs which are

utilized to install and tend the discharge facility. Figures 1.7 and 1.8 show the Navy causeway ferries and 1610 class Landing Craft Utility (LCU), both Navy and Army, which the discharge facility was designed to interface with, and are used to transport vehicles from ship to shore.

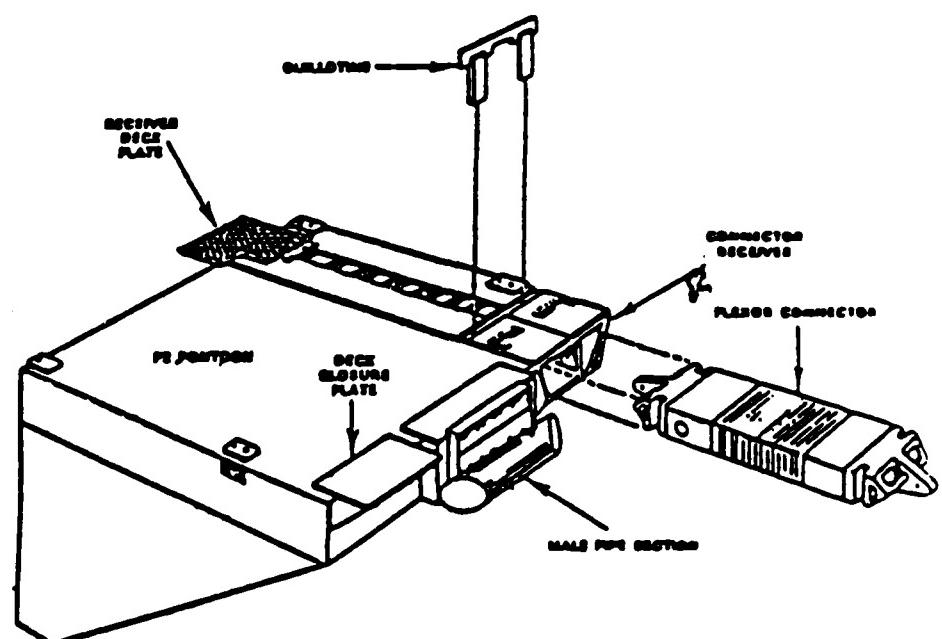
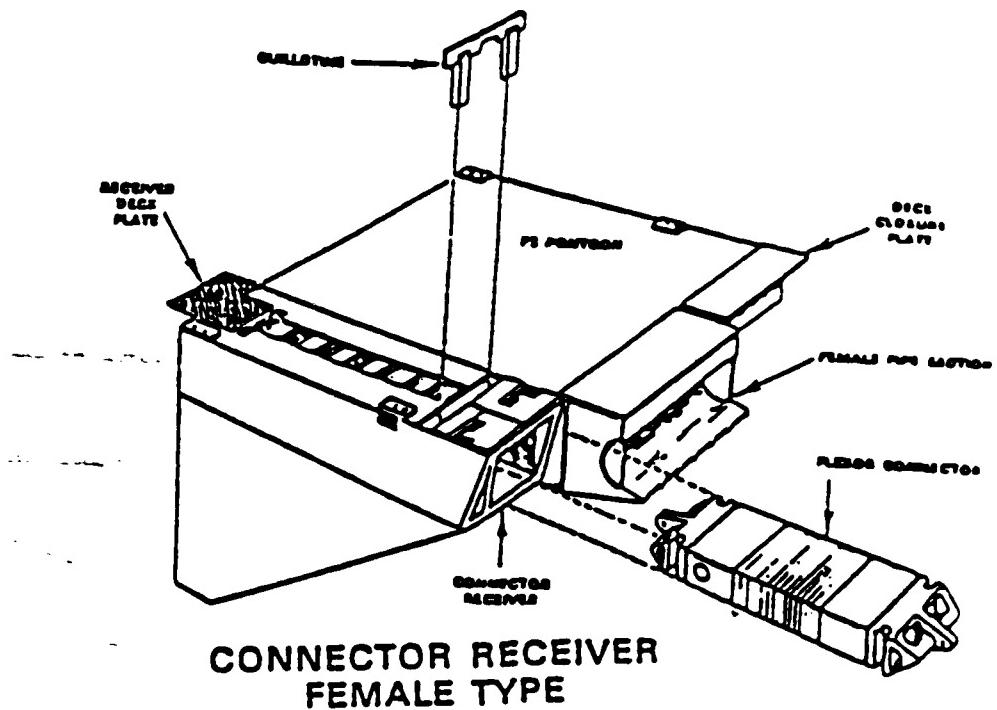
The vehicles to be utilized in the RO/RO test include approximately 100 vehicles nominated by the Army and Marine Corps as a mix of a range of vehicles that may be transported aboard RO/RO ships, and include the largest, heaviest and most unusual pieces of rolling stock in the service inventories. The exact mix of vehicles is discussed in detail in Chapter IV and Annex "C."

Figure 1.1 RO/RO Discharge Facility





**Figure 1.2 Typical Navy Causeway Section**



**CONNECTOR RECEIVER  
MALE TYPE**

Figure 1.3 Causeway Connector System

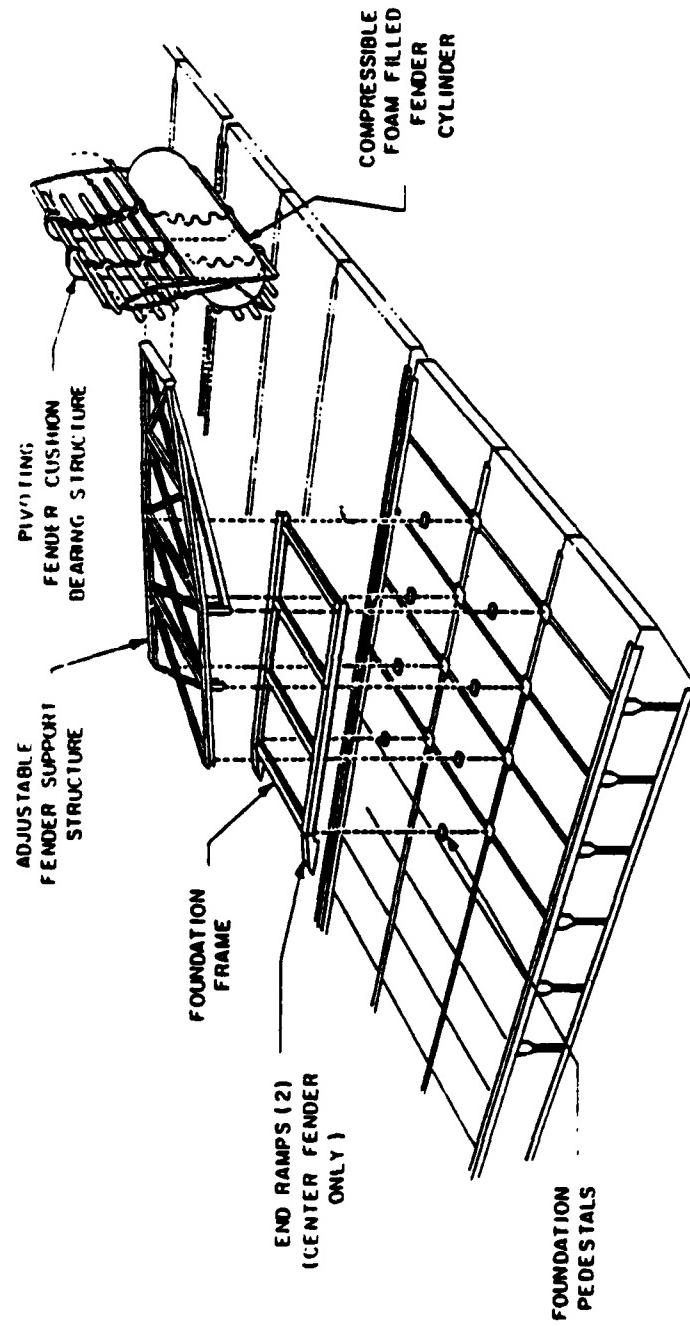


Figure 1.4 Causeway Platform Fender System

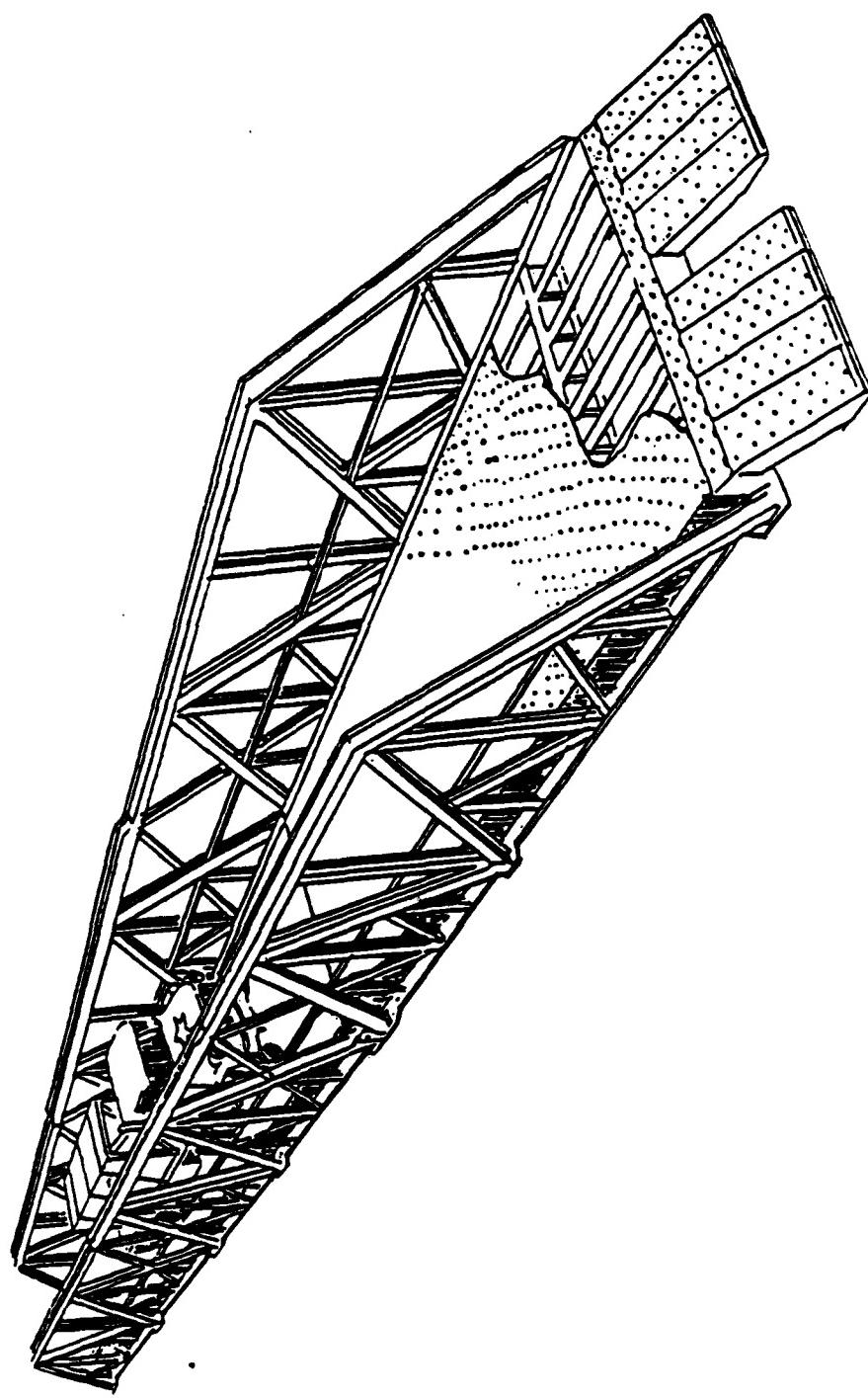


Figure 1.5 Calm Water Ramp

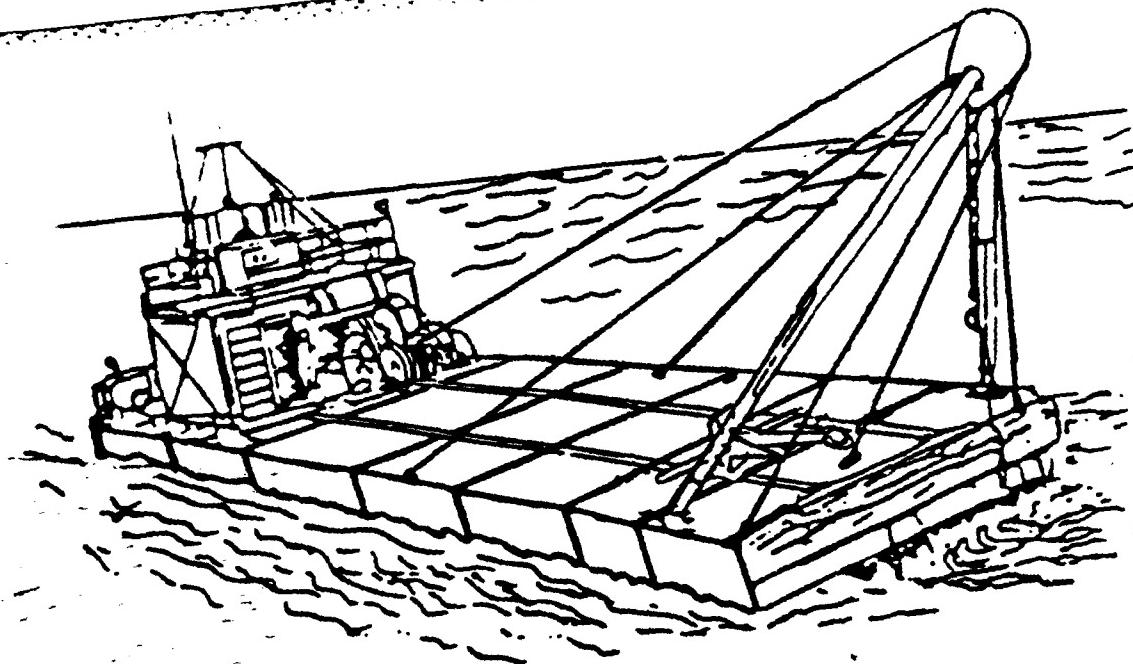


Figure 1.6 Typical Navy Warping Tug

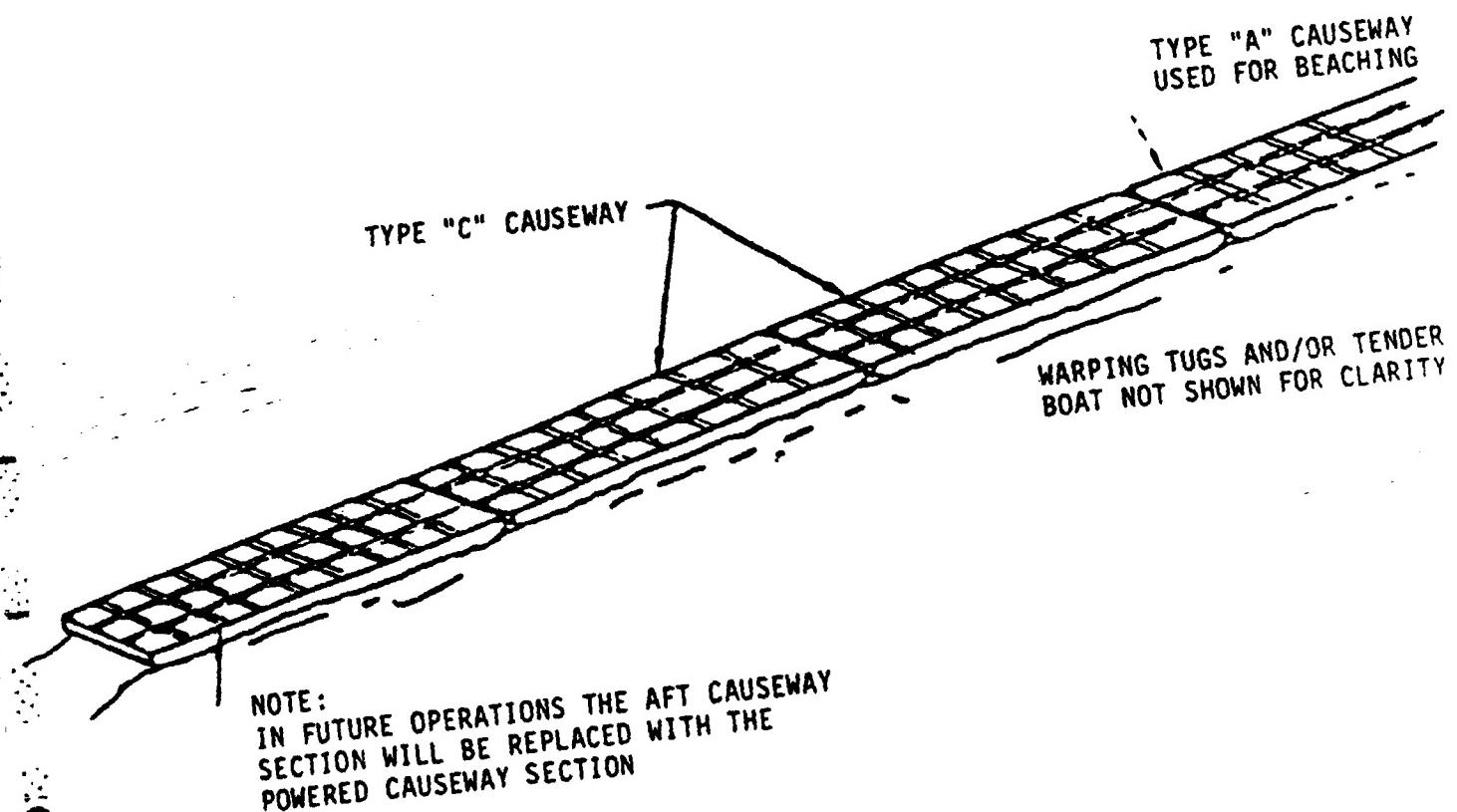
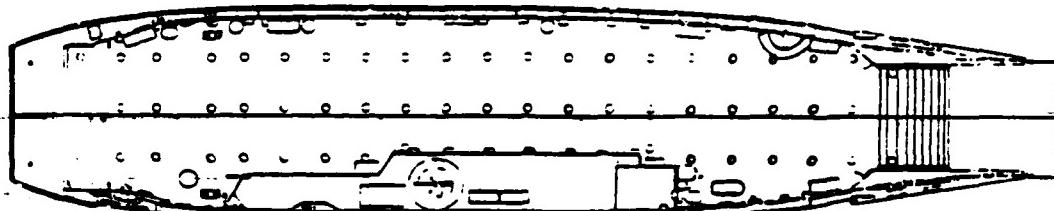
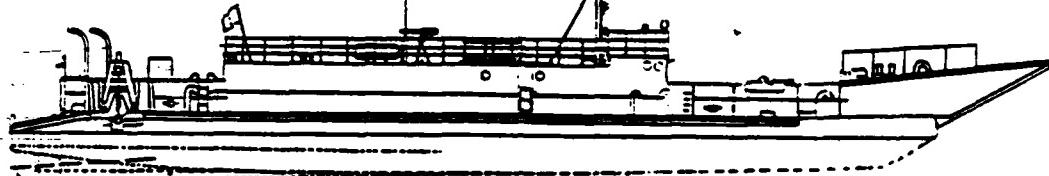


Figure 1.7 Typical Navy Causeway Ferry



LANDING CRAFT UTILITY (ASSAULT), LCU 1610 & 1626 CLASS



### LANDING CRAFT UTILITY (ASSAULT), LCU 1610 & 1626 CLASS

Purpose ..... To land and retrieve personnel and equipment (tanks, artillery equipment, motor vehicles) during amphibious operations  
Capacity ..... 168 tons (376,320 lbs)  
Crew ..... 14 men (2 CPOs, 12 enlisted men)  
Length overall ..... 135' - 3"  
Beam ..... 29' - 0"  
Draft ..... 3' - 3" (forward maximum landing) with 3 6' - 6½" (aft maximum landing) T-43 tanks  
Full load displacement ... 342 tons (766,080 lbs) (with 3 T-43 tanks)

Hoisting weight  
Hoisted by ..... Lifting slings (3 sections individually, entire craft)  
Construction ..... Flat bottom, welded steel  
Speed ..... 11 knots at full load displacement  
Fuel capacity ..... 10 tons (3,220 gallons)

Range  
NavShips Drawing No. .... LCU 1626-800-2120963  
LCU 1626-800-2120961  
LCU 1610-800-1698376  
LCU 1610-800-1448871

Stock No. .... Not assigned  
Engine details ..... 2 twin-mounted high speed diesel engines, 600 s.h.p. each at 2,100 r.p.m. Detroit Diesel Model 12007 P, 24 volt electrical system. Federal Stock Nos. S2815-541-0117 and S2815-541-0148

Propellers ..... 2 4' - 0" D with 2 KORT nozzles, 1 rh rotation, 1 lh rotation

Figure 1.8 1610 Class LCU (Navy and Army)

## **II. SCOPE OF TESTING**

**A. JOINT TEST OBJECTIVES:** The Joint Test Objectives for Phase II are:

(1) Evaluate the installation of the U. S. Navy Calm Water RO/RO Ship Offloading Facility on ships with integral ramps. (JLOTS II Test Subobjective 2.1).

(2) Evaluate the installation of the U. S. Navy Calm Water RO/RO Ship Offloading Facility on ships without integral ramps. (JLOTS II Test Subobjective 2.2).

(3) Evaluate the capability of the RO/RO offloading facility to discharge vehicle cargo from RO/RO ships with integral ramps in calm water operations. (JLOTS II Test Subobjective 3.1).

(4) Evaluate the capability of the RO/RO offloading facility to discharge vehicle cargo from RO/RO ships without integral ramps in calm water operations. (JLOTS II Test Subobjective 3.2).

B. TEST OVERVIEW

Testing will include the assembly, installation and operation of the RO/RO Discharge Facility with both a RO/RO ship with integral ramp, self sustaining (SS), and a non-self sustaining (NSS) RO/RO ship consecutively. The vehicles required for the test will be administratively delivered to the Navy Supply Center, Norfolk, Virginia for initial loading aboard the self-sustaining RO/RO ship and transported to a designated anchorage off Fort Story, Virginia.

The RO/RO Discharge Facility will be delivered to the anchorage at Fort Story with the components arranged in the configuration representative of deployment aboard a ship. It will be operationally assembled and then installed upon arrival of the first RO/RO ship. There will then begin a series of offloads and backloads of all 100 vehicles utilizing designated lighters for approximately three days. A single 10 to 12 hour work shift will be scheduled each day. However, these work schedules will be adjusted in order to obtain data for day and night operations for causeway ferries alone, LCU's alone, for various mixes of these two types of lighters and for facility installation to the ship. At the conclusion of this series of offloads and backloads, the vehicles will be staged at Fort Story

and the SS RO/RO ship will be released from the test. The Discharge Facility will then be operationally reconfigured (Ramp and adjustable fenders installed) for use with the NSS RO/RO.

The NSS RO/RO will arrive at the anchorage area to begin the second half of the test. This portion of the test will begin with a two day Navy sponsored technical evaluation (TECH-EVAL) of the discharge facility ramp, which was not tested during the previous testing program. A limited number of selected vehicles will be backloaded to the NSS RO/RO for this test phase.

On day four of the NSS RO/RO charter, the full scale JLLOTS II RO/RO test will commence with another series of backloads and offloads of all test vehicles and facility installations. At the conclusion of this series, the vehicles will be again staged at Fort Story and the NSS RO/RO ship will be released from the test. All test vehicles will then be released from Fort Story for administrative return to base units.

#### C. TEST SCHEDULE

Test operations were originally scheduled by reference B to be in October 1983. Ship availability for charters required that the test date be changed to July 1983. The planned sequence

of test activities is shown in Figure 2.1 and specific test events are discussed in Chapter IV. Exact dates for each ship charter will be negotiated by the Military Sealift Command (MSC) and promulgated when responses to the charter proposals have been received.

D. TEST DATA

Test data will be collected in accordance with the JLLOTS II, Phase II Data Management Plan, Reference C.

E. TEST CONTROL

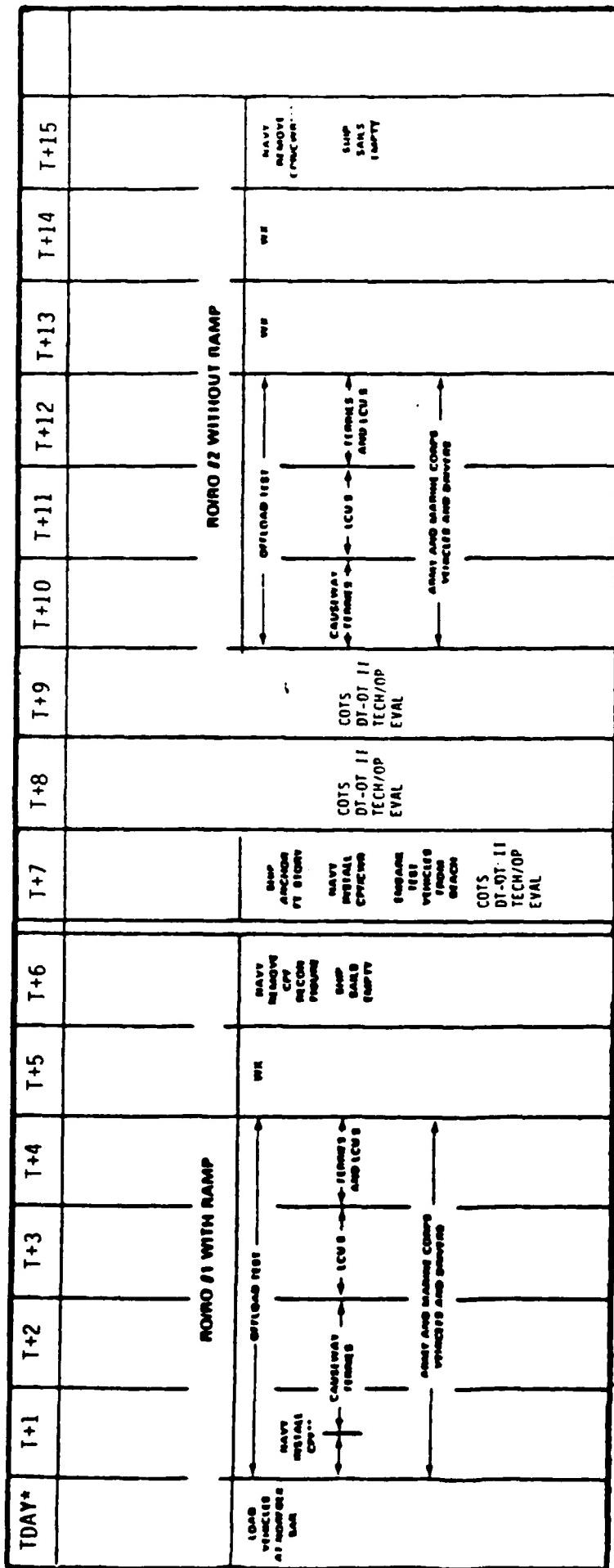
JLOTS II is an operational test. Consequently, operations will be controlled by orders issued by assigned Service units to implement their respective portions of this test plan. A detailed discussion of the joint operational control organization that will be established for this test is provided in Chapter V and Annex A to this test plan.

F. SAFETY

SAFETY IS PARAMOUNT in the conduct of all operations associated with this test. No operations will be conducted which will endanger personnel or equipment. Should an unsafe condition

develop, appropriate corrective action will be taken immediately. The JTD will be notified as soon as possible of the circumstances, including corrective procedures initiated and recommended further action.

Specifically, Senior Service Commanders will ensure that all personnel directly involved in the Test will have safety shoes, hardhats, and hearing protection issued to them. The U.S. Navy Senior Service Commander will ensure that adequate numbers of life preservers be made readily accessible to all personnel involved in test operations. Safety procedures to be employed by each Senior Service Commander will be in accordance with individual Service SOP's.



**Figure 2.1** RO/RO Test (Event Details). First Quarter Fiscal Year 1984, Fort Story

### **III. COMMERCIAL RO/RO OPERATIONS**

The development of the RO/RO Discharge Facility is based upon the requirement to support military contingency off-loading of merchant Roll-On/Roll-Off (RO/RO) ships in an off-shore environment. RO/RO ships in the last decade have grown considerably in proportion to the remainder of the U. S. flag fleet, although still only about one-quarter the size of the containership fleet. The capability of RO/RO ships to rapidly load and off-load coupled with the minimal facilities and personnel required to support these operations have made RO/RO ships economically appealing and promoted trailer loaded cargo.

For military operations RO/RO ships possess the same desired features of rapid loading and off-loading, except for off-shore cargo transfer requirements. With the development of the RO/RO Discharge Facility this limitation can be overcome, thus permitting off-shore discharge of vehicles.

RO/RO ships present several problems with respect to off-shore operations involving military lighters. First, most ship ramps are too large for direct ship-to-lighter marriage with military lighters. A second major problem is that some ships do not have integral ramps and thus, operate from designated ports

where ramps and piers are provided in order to support operations. These ships can only be used in contingency operations where a ramp is made available in the objective area.

#### A. RO/RO SHIPS WITH INTEGRAL RAMPS

The RO/RO Discharge Facility was developed to provide a floating platform using the RO/RO Discharge Facility as an interface between RO/RO ships with integral offloading ramps (Self-Sustaining RO/ROs) and lighters. Table 3.1 provides characteristics of existing U. S. flag RO/RO vessels which are configured with their own integral offloading ramps. Table 3.2 provides characteristics of the planned TAKX (Maritime Repositioning Force RO/ROs) and the planned TAKRX (Rapid Deployment Force RO/ROs). All of the RO/ROs listed within Table 3.1 and 3.2 can be offloaded offshore through the use of the ship's offloading ramp and the RO/RO Discharge Facility. The MS CYGNUS which is planned for use during JLOTS II, is typical of self-sustaining RO/RO vessels.

The CYGNUS was originally constructed by Sasebo Heavy Industries Co., Ltd., Japan for Hansa Line. The ship was purchased by Lykes Lines and is now under long term charter to MSC. As shown in Figure 3.1 the CYGNUS has four deck levels for vehicles and a series of internal ramps and a lifting platform which provide access to all deck levels from the stern

	CYGNUS	LYRA	CALIFORNIA	MAINE CLASS	COMET	METEOR	DEFIANCE
Ships available	1	1	1	4	1	1	4
Ships names	CGNUS	LYRA	ADM W.H. CALLAGHAN	USNS JUPITER USNS MERCURY TYSON LYKES CHARLES LYKES	USNS COMET	USNS METEOR	DEFIANCE RED JACKET GREAT REPUBLIC YOUNG AMERICA
Length (ft)	634	634	694	684	499	540	602
Breadth (ft)	89	89	92	102	78	83	90
Draft (ft)	30	30	27	32	22	24	31
Speed (knots)	21.4	21.4	25	23	18	22	25
Maximum Displacement (LTON)	26,880	26,880	26,573	33,765	16,286	21,580	27,980
Clear Deck Area (ft <sup>2</sup> )	111,000	113,000	167,537	159,422	84,000	99,000	14,000
Deck Height							
o Main	N/A	N/A	11'9"	N/A	13'6"	12'6"	N/A
o 2nd	13'8"	13'8"	14'2"	9'11"	12'6"	13'1"	7'0" to 14'6"
o 3rd	13'8"	13'8"	11'0"	10'0"	10'2"	10'0"	NONE
o 4th	13'8"	13'8"	7'11"	17'0"	6'11"	8'7"	NONE
o 5th	NONE	NONE	8'1"	9'11"	6'11"	8'6"	NONE
Stern port (ft) / (ft)	24x40	24x40	17x18	16x40	13x18	13x18	15x15
Ship Offloading Ramp Type (*)	Stern Slewng	Stern Slewng	Stern	Stern Quarter	Stern	Stern	Stern

(\*) Ramps shown are those compatible with the RO/RO Platform. Many of these ships have additional ramps and ports which are not compatible with the Platform Facility.

Table 3.1 Characteristics of RO/RO Ships with Integral Offloading Ramps

	TANK - GENERAL DYNAMICS	TANK - RETU SHIP MAERSK "E" CLASS	TANK - MATEMANN	TANK - TANKS SL(7) CONVERSION
Ship Planned	5	5	3	8
Length (LBP, ft)	614'7"	705'5"	766	880'6"
Breadth (ft)	105'6"	90	105'6"	105'6"
Draft (ft)	29	32'10"	32'3"	34
Speed (knots)	18	17.5	20	30
Clear Deck Area (ft 2)	162,500	120,080	152,524	169,600
Deck Height (ft)	B - 8 C - 12 D - 10 E - 11 F - 9 G - 10 H - 7	Main - 9 1st - 11 2nd - 9	Main - Open 2nd - 19' 3rd - 16' 4th - 22'6"	Main - 19'6" 2nd - 13'6" 3rd - 13'6" 4th - 13'6" 5th - 8'6"
Stern Port (ftw) (ft)	15 x 53	17 x 24	19 x 44	None
Ship offloading (Ramp type)	Stern slewling ramp	Stern semi-slewling ramp 102' long x 16' wide 2 sideport ramps One is 90' x 16' Other - 45' x 16'	Stern slewling ramp (73' long x 20' wide) One Port, One STBD Attached to hinged platform (12 x 19')	Side ramps

Table 3.2 Planned TANK & TANKS RO/RO Ships

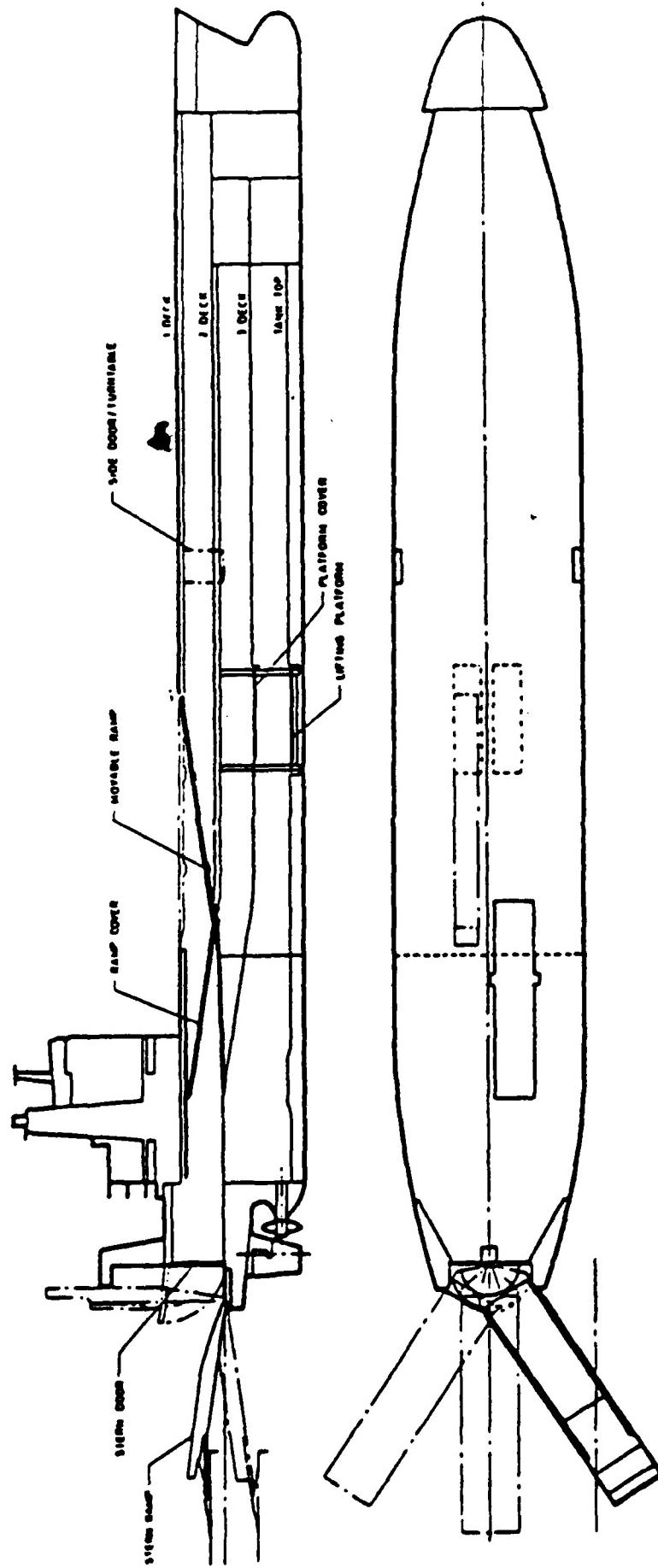


Figure 3.1 CYGNUS Inboard Profile and Plan Views

slewing ramp. The ramp is 112 ft long by 23 ft wide; the slope of the roadway can be as much as 7 degrees, and ship heel angles of 4 degrees and 1.5 trim by the stern can be accommodated. The ramp has been designed for a load of two 80 ton trailers at pierside. The ramp can be locked in five positions, astern, 16.5 degrees and 33 degrees from centerline, Port and Starboard. For offshore operations the ramp is locked in the astern position.

Table 3.1 provides additional characteristics of the CYGNUS.

#### B. RO/RO SHIPS WITHOUT INTEGRAL RAMPS

For those RO/RO ships which do not carry their own offloading ramp, a special RO/RO Discharge Facility Ramp and platform fenders are installed on the CPF. Table 3.3 provides characteristics of existing U. S. flag RO/RO vessels which have no offloading ramps. One of these ships (PONCE/LURLINE class or GREAT LAND class) is planned for use during JLOTS II.

The PONCE/LURLINE class ships were built by Sun Shipbuilding as trailer ships. They are operated by the Puerto Rican Maritime Authority, Matson Lines and the Acadian Shipping Corp. These ships carry trailers primarily, with special tractors and ramps provided by the ports serviced. Loading and unloading is done through three side ports located on the

	PONCE/LURLINE CLASS	GREAT LAND CLASS
Ships available	5	5
Ships names	PONCE BAYAMON PUERTO RICO LURLINE MATSONIA	GREAT LAND FORTALEZA CAGUAS ATLANTIC BEAR WESTWARD VENTURE
Length (ft)	700	790
Breadth (ft)	105	105
Draft (ft)	28	28
Speed (knots)	24	24
Maximum Displacement (LTON)	25,350	31,762
Clear Deck Area (ft 2)	150,000	211,100
Deck height (ft)		
o Main	15 in super structure tunnels	15 under spar deck
o 2nd	15	15
o 3rd	15	15
o 4th	7 or 15	13'7" to 15
o 5th	NONE	NONE
Stern port(s) (hxw) (ft)	N/A	16 x 16 (2)
Side port(s) (hxw)	FWD 15'3"x24' Midship 15'3"x24' (2 ships) 11x24' (3 ships) AFT 15'3"x21'	FWD 15'3"x24' Midship 15'3"x24' APT 15'3"x21'

Table 3.3 Characteristics of RO/RO Ships Without Integral Offloading Ramps

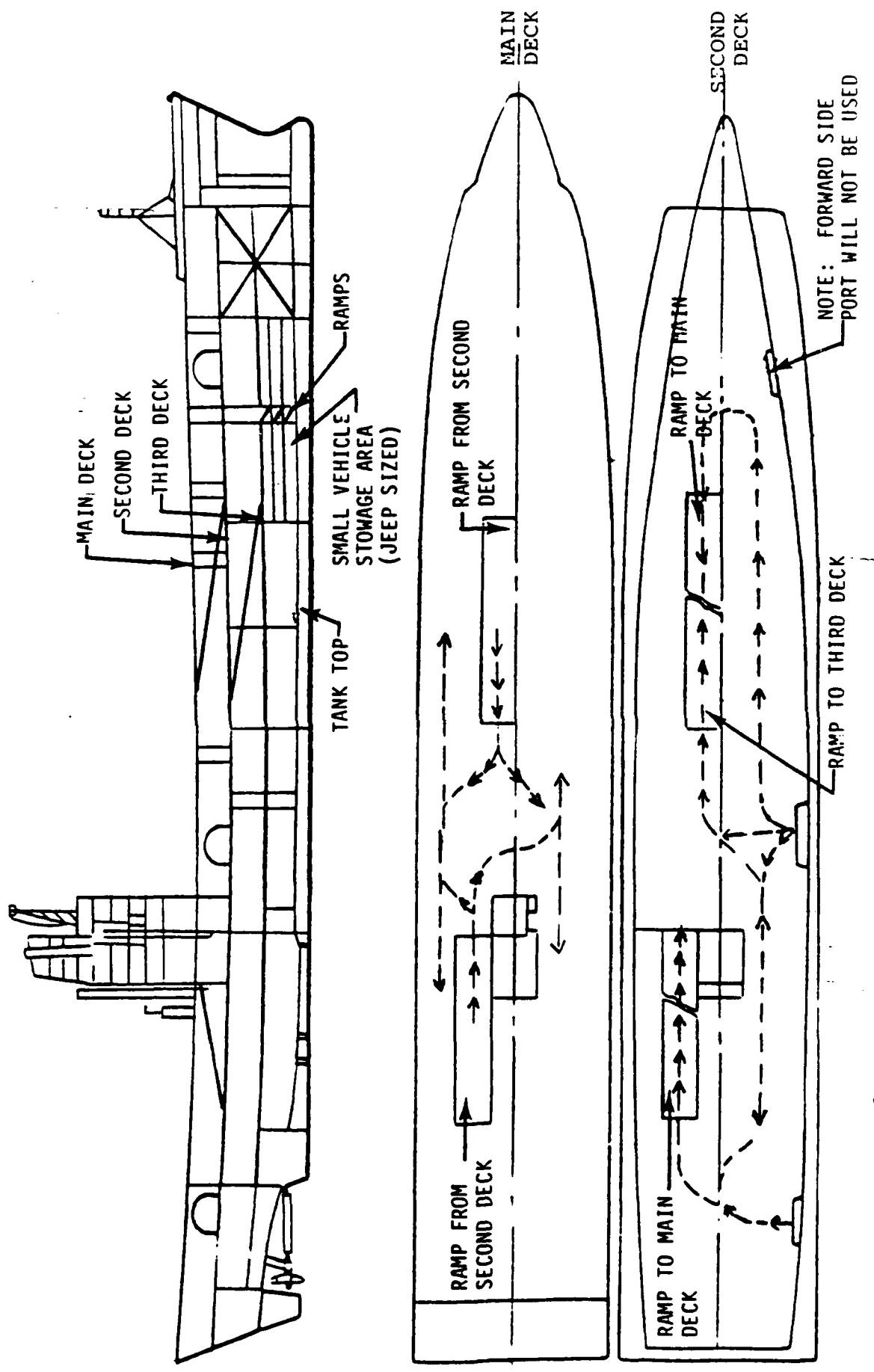
starboard side; no stern passage is provided on this class. Internal movement between decks is accomplished by fixed ramps.

Ships of the PONCE/LURLINE class vary in configuration of the third and fourth decks. Most have automobile decks installed in the forward deck area. These have a clearance of about 7 feet and could be used for low profile vehicles.

Figure 3.2 shows the relative location of the three offloading ports. The size of the three ports are different and may even vary from ship to ship. Table 3-3 shows the ship's principal characteristics and include dimensions of the loading ports. Each ship has sufficient winches to haul the Discharge Facility Ramp into place. Four winches, with a capacity of 56,000 pounds per winch, are installed at each port to allow both vertical and transverse ramp movement. Although earlier ships have the winches mounted outside the shell the later ships have the winches mounted inside, there in no functional difference in the two designs.

The GREAT LAND class ships are stretched versions of the PONCE class, with approximately 91 feet added to the midbody for an overall length of 791 feet. A mezzanine deck forward of the superstructure provides extra cargo capacity. Various modifications are found in these ships depending on the trade route the ship services. Three starboard ports were built into

all ships in approximately the same locations as the PONCE class. On some ships, winches are used to hoist shore-based ramps to the ship. Number, arrangement, and capacity of the winches is essentially unchanged from the PONCE class design. GREAT LAND class ships also have stern (transom) ports although not all are outfitted with winches necessary to lift the ramp.



**Figure 3.2** Ponce de Leon Class Inboard Profile and Plan Views

#### **IV. RO/RO TEST OPERATIONS**

##### **A. SELECTED TEST EQUIPMENT**

The selected military test equipment to be used during Phase II RO/RO operations consists of three main types: the U.S. Navy RO/RO Discharge Facility, lighterage, and U.S. Army/Marine Corps vehicles. For the purpose of this test, the RO/RO Discharge Facility will be administratively moved to the test site, assembled offshore, and installed. In an actual contingency, the Discharge Facility would be transported aboard merchant shipping and delivered to the objective area prior to the arrival of a RO/RO ship. The lighterage used during this test consists of causeway ferries and 1610 Class Landing Craft Utility (LCU). Again, the lighterage used during this test will be administratively moved to the test site. During an actual contingency however, the lighterage used for this type of operation would either arrive by merchant shipping or already be on station in the objective area after an amphibious assault. The U.S. Army/Marine Corps vehicles used during this test consist of both wheeled, and tracked equipment. A broad variety of outsized, heavy, and difficult handling equipment was chosen to provide data on vehicle throughput rates, Discharge Facility handling, and lighterage performance. This data would ultimately be available for future contingency planning. In an

effort to gain a full appreciation of the test equipment used during Phase II, the following detailed description of equipment is provided.

(1) RO/RO Discharge Facility for RO/RO Ship with Integral Ramp.

The Discharge Facility represents a new concept for adapting Navy causeway sections for offloading merchant RO/RO ships offshore. The principal element of the facility, the Causeway Platform, utilizes the existing basic pontoon system which has been in the Navy's inventory since its development during World War II, (see Fig. 1.1).

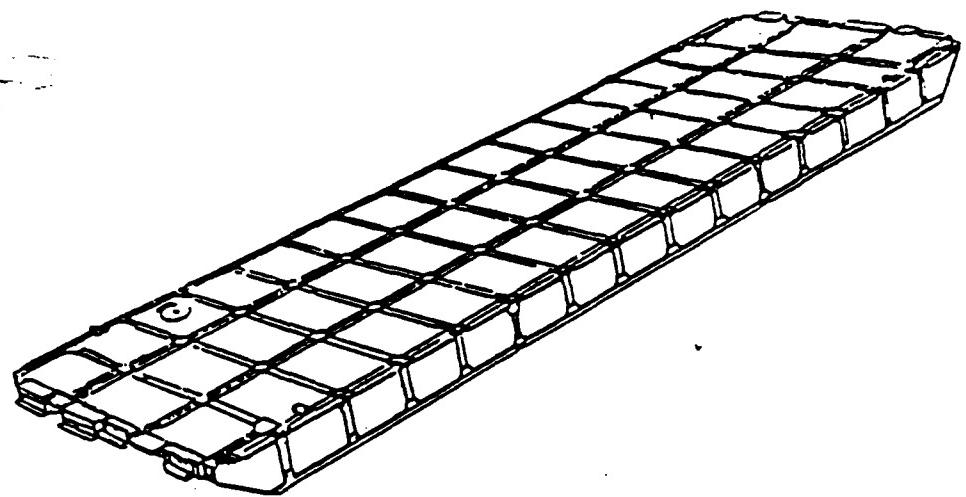
The fundamental element of the causeway system is a watertight can (pontoon) made of 3/16 inch thick steel with plan measurements of 5 feet by 7 feet. The depth of the can is 5 feet. The cans are assembled into a causeway section using angles, plates, and other hardware. Design emphasis for assembly is placed on bolting rather than welding. The most common configuration is the 21 x 90 foot causeway section, which consists of 3 rows of 15 cans each bolted together with a 9 inch longitudinal gap between cans. The cans on the ends are manufactured in different configurations depending on whether

they are used for in-shore terminations, for connectors between sections, or for off-shore terminations. Figure 4.1 depicts the basic "C" causeway section configuration.

In order to provide a sufficiently large platform to support an offloading ramp, provide an adequate working area, and provide sufficient drive-off and maneuvering room for loading causeway ferries and LCU's, a 2 X 3 (2 rows by 3 abreast) causeway configuration has been developed. Figure 4.2 shows the assembled causeway platform (2 X 3).

A side to side and end to end method of connecting causeway sections is accomplished by using standard flexor connectors. This system consist of a pair of large flexible probes mounted on one end of a causeway section which fit into a pair of receivers built into the mating causeway section (see Figures 4.3 and 4.4).

Side connectors were developed for connecting the causeway sections together side by side. These consist of special male and female shear connectors and the use of the same type flexor connectors used on end connections. The side mounted shear connectors are designed to mount in the existing Elevated Causeway external spudwell pockets. Figures 4.5 and 4.6 show side connectors.



WEIGHT:	Approximately 80 tons
LOAD CAPACITY:	96 Tons
LENGTH:	90 Feet
WIDTH:	21 Feet
DRAFT EMPTY:	1½ Feet
DRAFT LOADED:	4 Feet

Figure 4.1 "C" Causeway Section

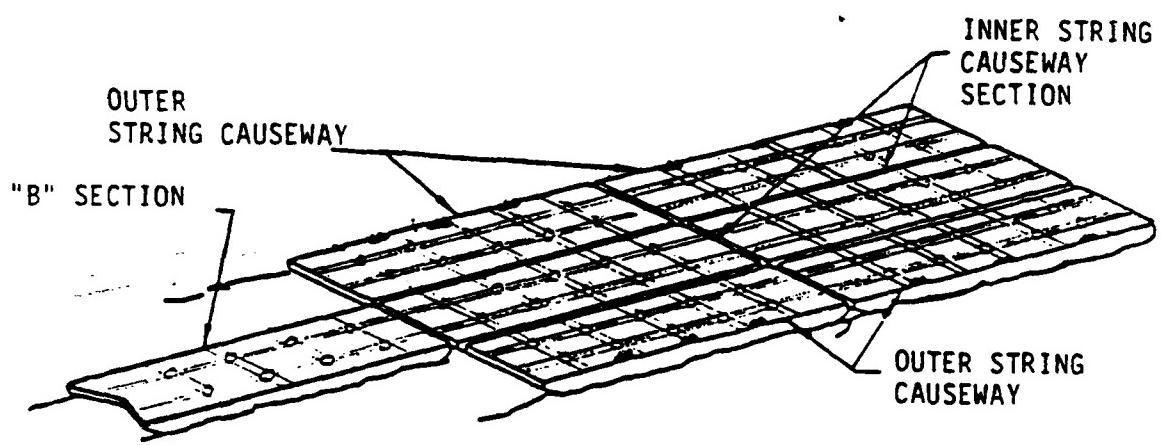


Figure 4.2 Causeway Platform ( 2 x 3 Configuration "B" Section)

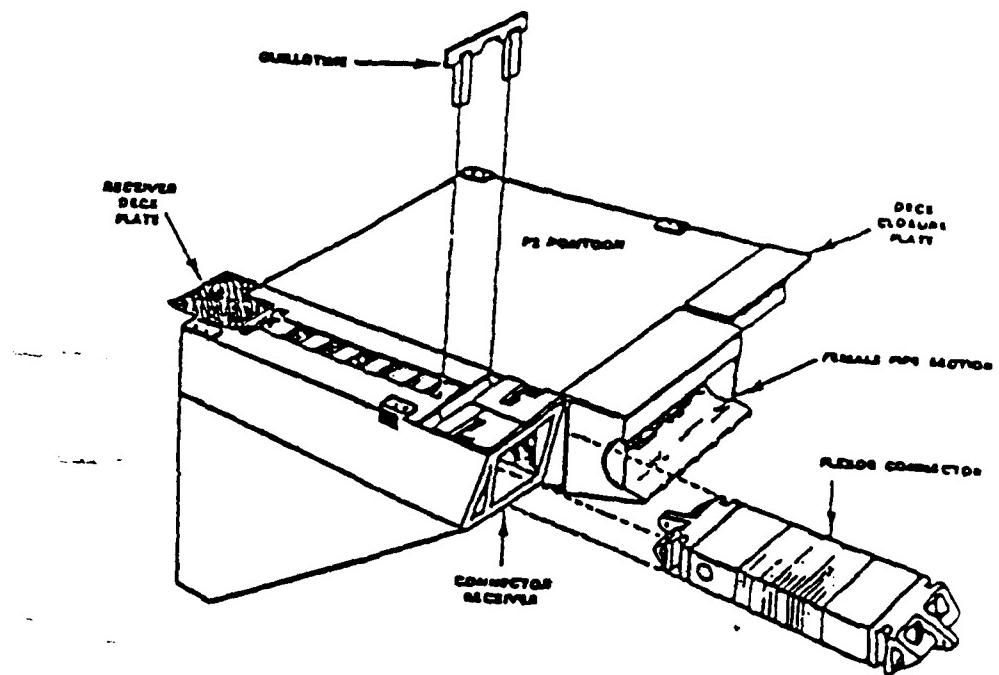


Figure 4.3 Connector Receiver, Female Type

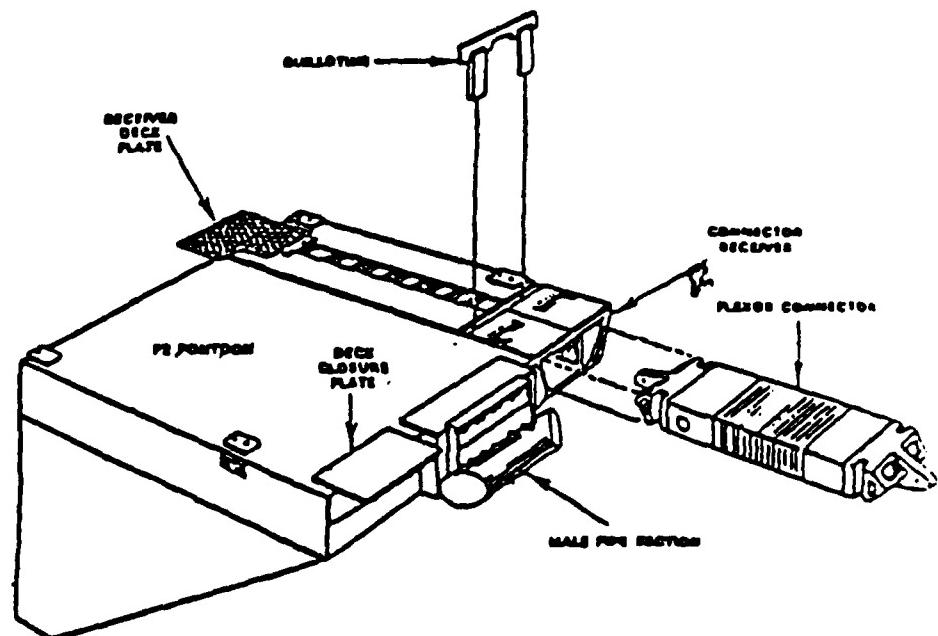


Figure 4.4 Connector Receiver, Male Type

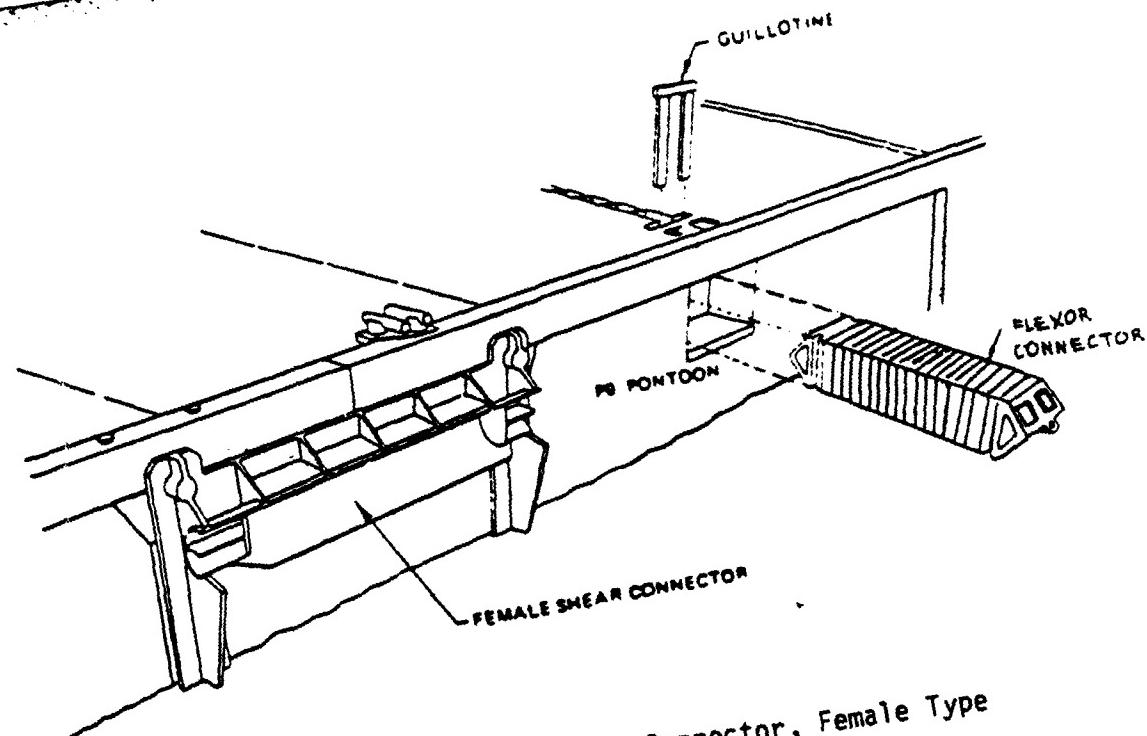


Figure 4.5 Side-to-Side Connector, Female Type

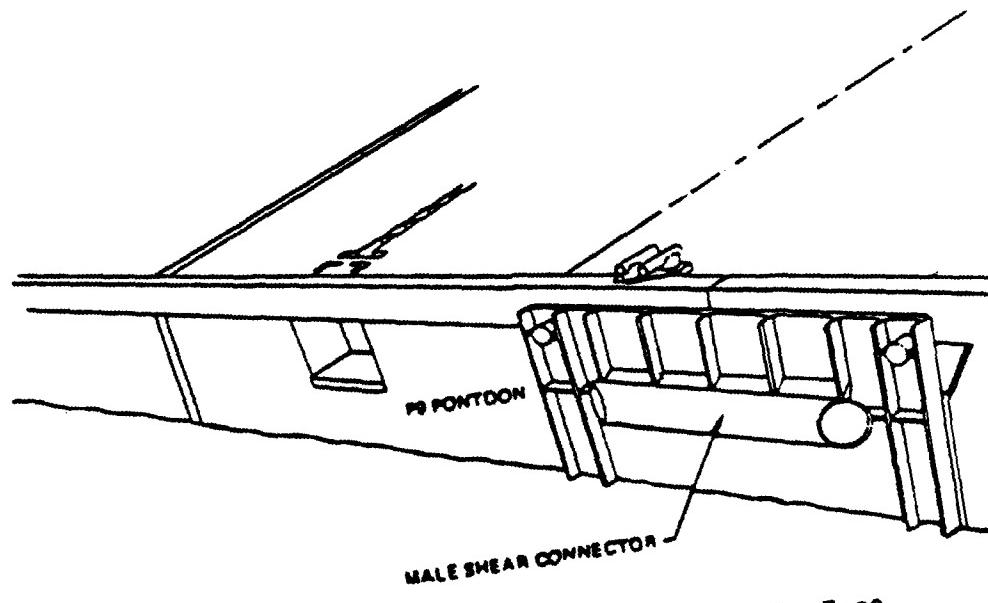


Figure 4.6 Side-to-Side Connector, Male Type

In addition to the causeway sections required for the 2 X 3 causeway platform, an additional causeway section specifically designed for bow marriages with 1610 class LCU's is needed. Figure 4.7 depicts a "B" causeway section used for LCU marriages.

In addition to the basic causeway sections that comprise the causeway platform, the following items are required to complete the RO/RO Discharge Facility:

- dunnage to provide a protective barrier between the platform deck and the base of the offloading ramp.
- closure plates to bridge the approximately 14 inch gap between the side connected causeway sections.
- mooring lines of sufficient length and strength to moor the Discharge Facility to the ship.
- sufficient tools/support equipment to complete all tests in a timely manner.

(2) RO/RO Discharge Facility for RO/RO Ship Without Integral Ramp.

The equipment required for a non-self sustaining RO/RO ship is basically the same as previously described with the addition of a RO/RO Discharge Facility fendering system and Ramp.

(a) RO/RO Discharge Facility Fendering System

The fender system includes three support structures each weighing approximately 11,000 lbs and measuring approximately 29 ft in length (heel of structure to leading edge of fender cushions) and 11 ft in height (deck of causeway platform to top of fender backing plate). Each structure will be bolted to eight (four on each side) pedestal mounts. The pedestal mounts can be installed independently of the foundation and support structure (as they would for operationally dedicated causeway sections) or installed in conjunction with either the foundation structure alone or the entire support structure. (see Figure 4.8)

The three fender support structures are located over the forward end of the pontoon cans in the causeway sections of the Causeway Platform. Each of the three fender support structures can be bolted to their foundation frames in

the fully retracted position. To allow for hull curvature the fender support structures must be in the retracted position for the two stern ports, can be either retracted or extended for the midship port, and must be extended for the after side port.

(b) RO/RO Discharge Facility Ramp

The RO/RO Discharge Facility Ramp design capacity is 134,000 pounds making it capable of handling the heaviest and largest military vehicles that might be carried aboard RO/RO ships. The ramp has been designed to utilize the existing ship's interface hardware, which is currently used to secure the shore-based ramps to the ship's offloading ports. As such, the ramp, as shown in Figure 4.9 is a 120 foot long structure, which resembles a truss-type bridge. The ramp consists of landing shoes, two 40 foot end sections and a 40 foot center section. The ramp can also be used as a 80 foot ramp consisting of landing shoes and two end sections. The 80 foot configuration is intended for austere pier offloading operation. The 120 foot configuration is intended for all off-shore ship offloading operations. The ramp sections are connected together by means of large pins near the bottom and bolting plates near the top. The ramp is a welded construction of A36 steel, or, mild steel. The road surface of the ramp consists of both a non-skid textured surface and studs to provide good traction for the wide range of vehicles to be offloaded. A bold yellow center

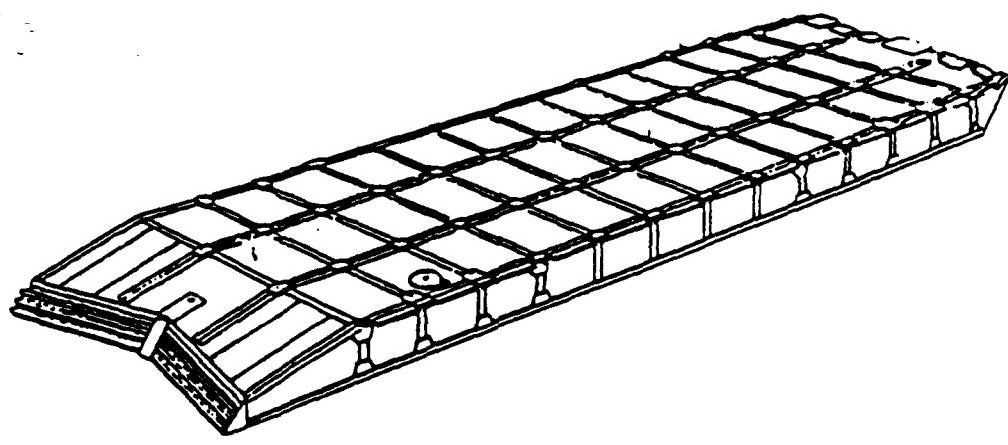


Figure 4.7 "B" Causeway Section for LCU Marriages

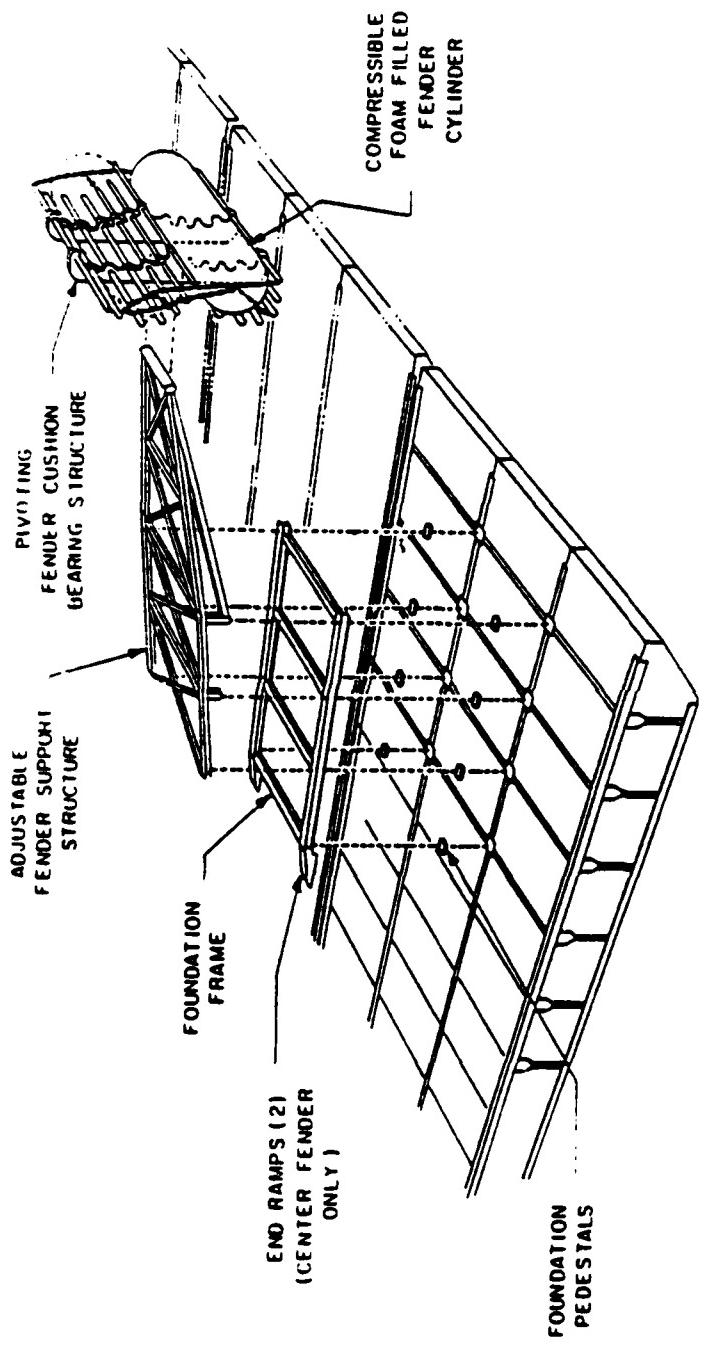
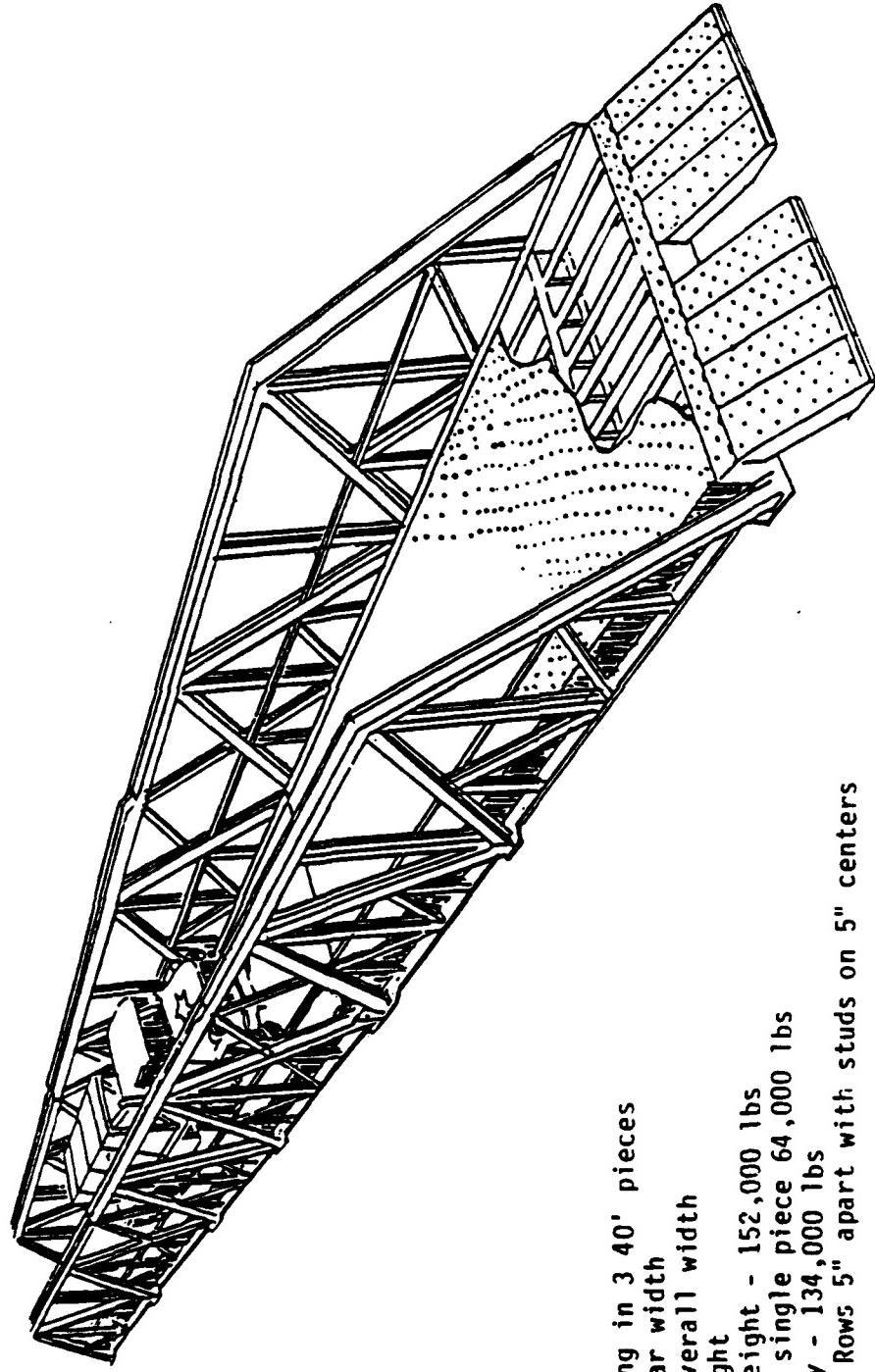


Figure 4.8 Causeway Platform Fender System (Hull Conforming)

stripe is painted down the middle of the roadway to assist drivers in maneuvering. The stripe is an especially valuable aid in moving tanks.

The ramp interface with the 2 X 3 causeway platform enables the platform to distribute the weight of the ramp and vehicle over a large area and allows relative motion between the ramp and the platform. The ramp landing shoes have a total contact area of 40 square feet. The bottom of the steel shoes are configured with a plastic material, called ultra-high molecular weight polyethylene. The ramp shoes rest on a 10 foot X 18 foot stainless steel skid plate, which is supported by wood dunnage which covers an area of approximately 20 foot by 40 foot on the center causeway deck. Since platform movement is virtually independent of the ship, the ramp-platform interface must allow for movement in the same fashion as a ship's accommodation ladder moves at a pier. The ramp shoe and skid plate have been designed to allow for this movement.

The ship end of the ramp was designed to mate with the existing ship's hardware used with shore-based ramps. Figure 4.10 shows the ramp on the platform with winch cables attached. It is important that the two lines be crossed (as shown) so that both vertical and horizontal movement of the ramp can be controlled. The ramp is raised with the lift lines until the end adapter is high enough to clear the ship's off-loading



120' long in 3 40' pieces  
14' clear width  
16' 8" overall width  
10' height  
Total weight - 152,000 lbs  
Largest single piece 64,000 lbs  
Capacity - 134,000 lbs  
Studs - Rows 5" apart with studs on 5" centers

Figure 4.9 Calm Water Ramp

port sill and then hauled inboard with the drag lines. When the ramp is in the position shown in Figure 4.11, the ship's supporting wire rope pendants are attached to the ramp. All four drag and lift winches are slacked and the supporting two pendants now carry the full weight of the ramp. Figures 4.12a and 4.12b depict the RO/RO Discharge Facility arrangements on GREAT LAND and PONCE-LURLINE class ships.

(3) Lighters and Small Craft

Causeway ferries and LCU's are the two basic means to transport the offloaded vehicles from the Discharge Facility to the shore. In addition to these lighters, U.S. Navy warping tugs (as shown in Figure 4.13) are used to power and position the facility. Two warping tugs are required to keep the facility in position. The causeway ferries to be used during Phase II consist of 4 causeway sections powered by 2 LCM-6 tender boats (Figures 4.14 and 4.15).

In future operations, the LCM-6 will be replaced by the powered causeway section or the Side Loadable Warping Tugs (SLWT) shown in Figures 4.16 and 4.17. In both cases, the Causeway Ferry is used as a drive-through lighter, allowing vehicles to drive forward from the facility onto the Causeway Ferry.

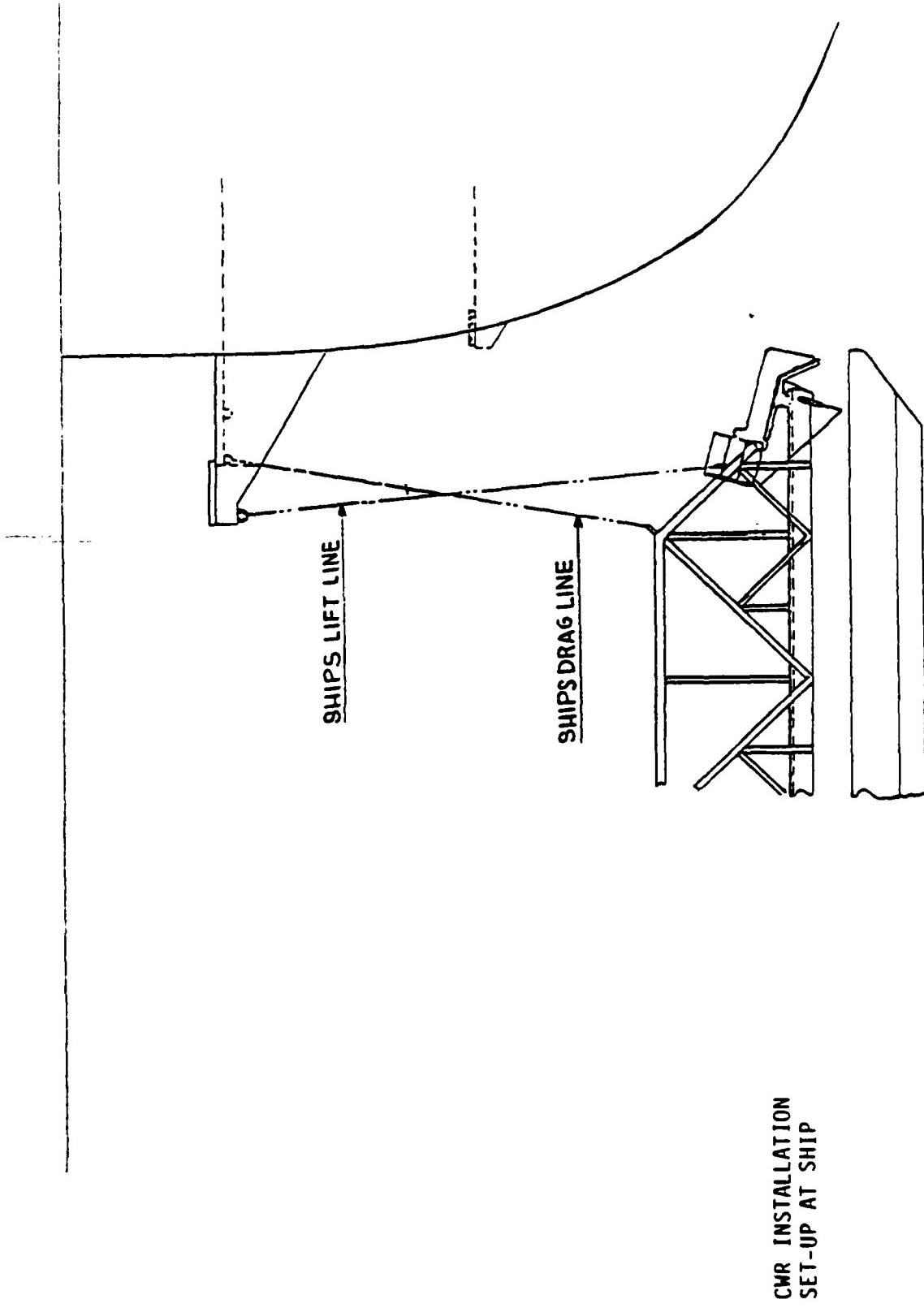


Figure 4.10 Ramp on Causeway Platform Ready to Raise

The 1610 Class LCU shown in Figure 4.18 will be used by both Army and Navy for offloading operations using the "B" causeway section on the facility as the interface between the two. When offloading vehicles on the shore, the LCU will marry with a 4 section causeway pier to provide wheeled vehicles with a dry ramp offload onto the beach. LCU's can also beach directly and provide a dry ramp if beach gradients permit.

Since the LCU bow ramp connects to the B-Section of the RO/RO Facility, vehicles must back onto the LCU in order to drive forward at the beach.

(4) Selected Test Vehicles

The U.S. Army and Marine Corps vehicles to be used during Phase II operations consist of both wheeled and tracked equipment. For the purpose of this test, an item of equipment consists of a prime mover and its trailer. For example, an M52A2 truck with an M970 refueler trailer is considered to be a complete item of equipment. A detailed listing of equipment is contained in Annex B.

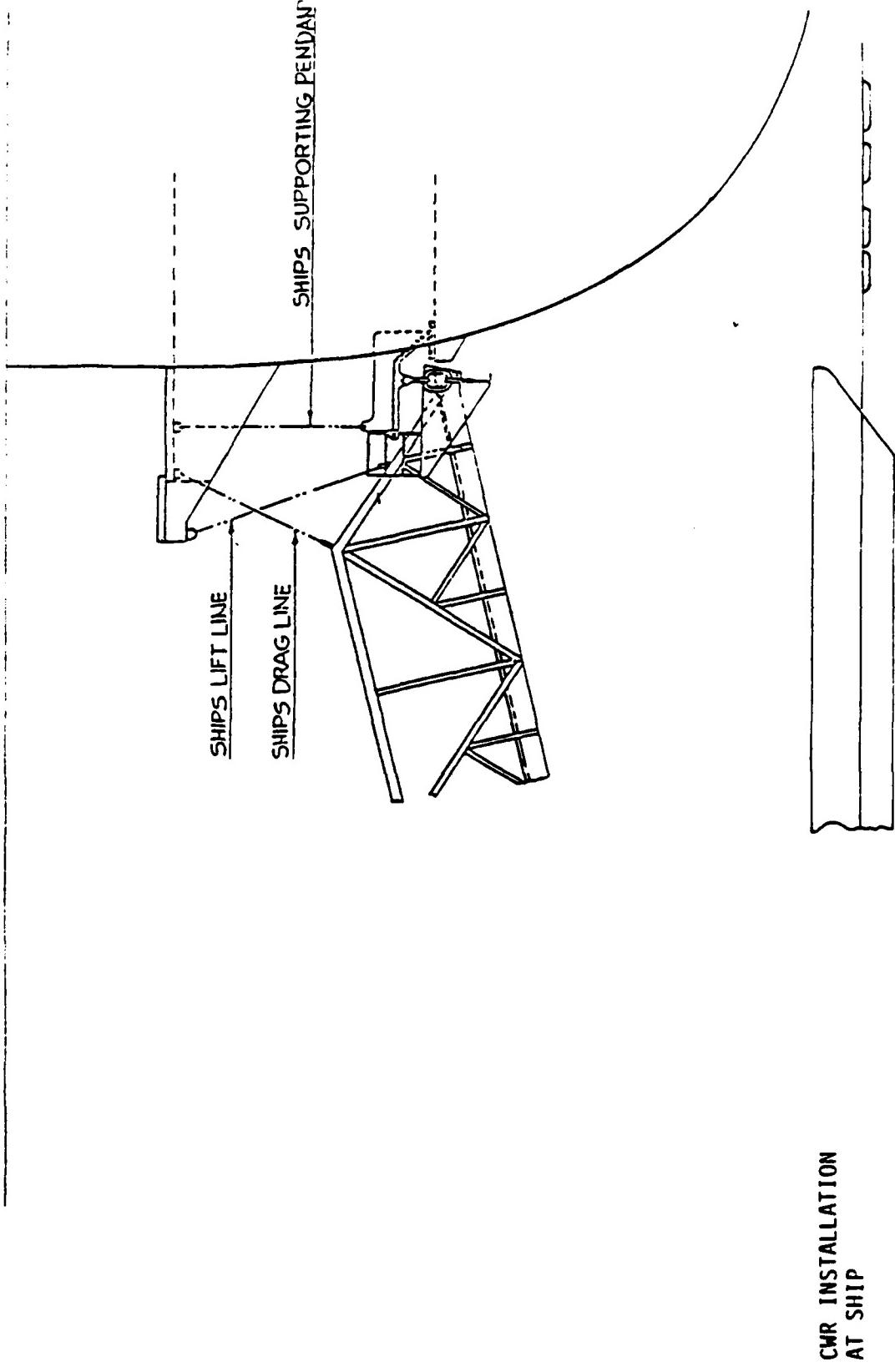


Figure 4.11 Ramp in position at Offloading Port

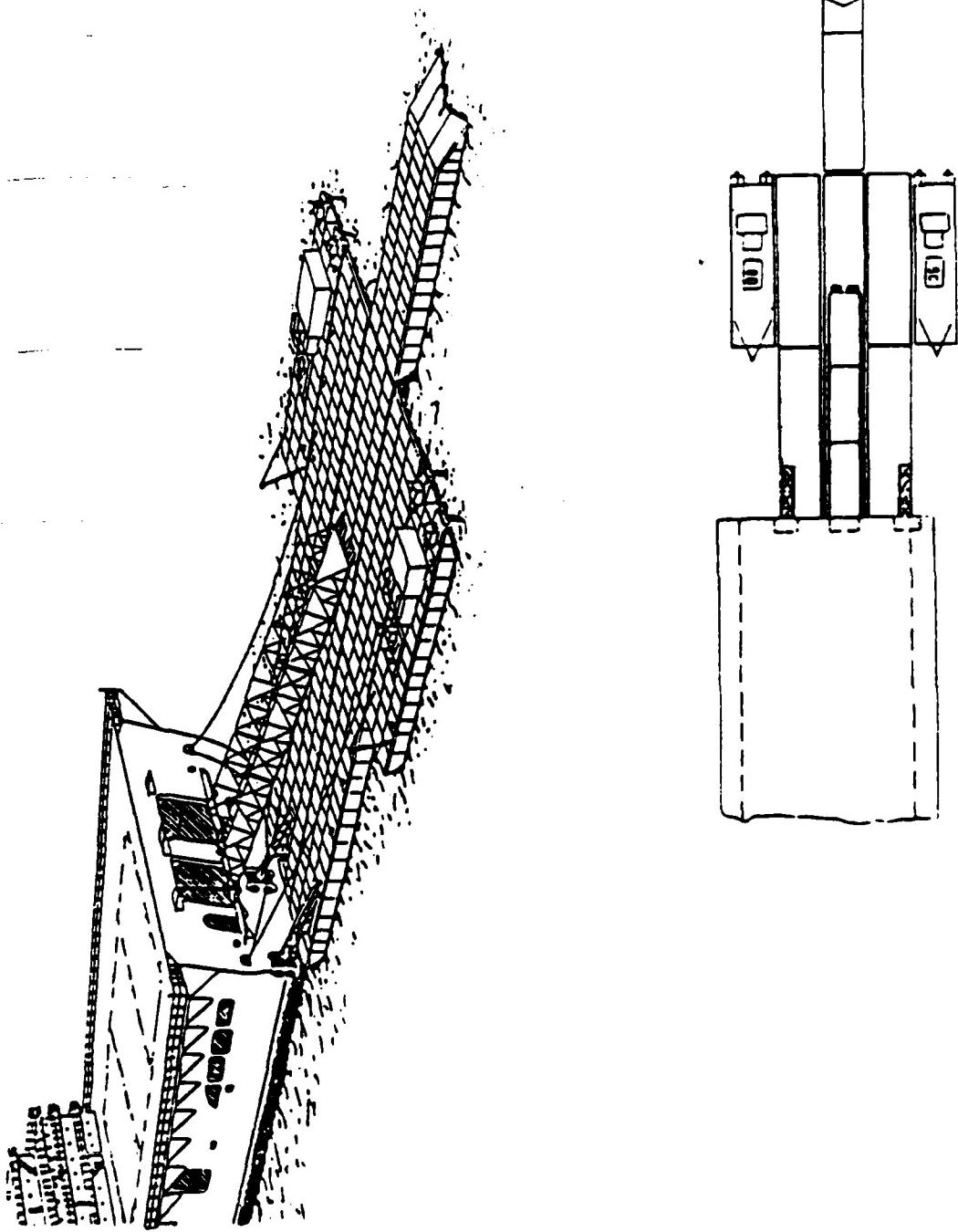
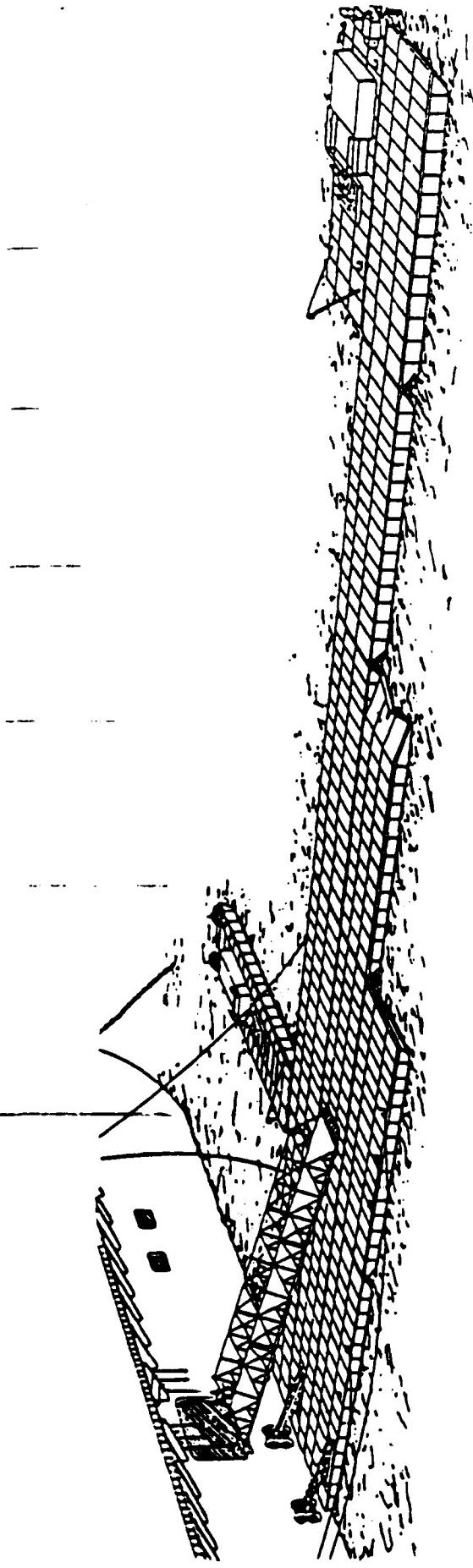
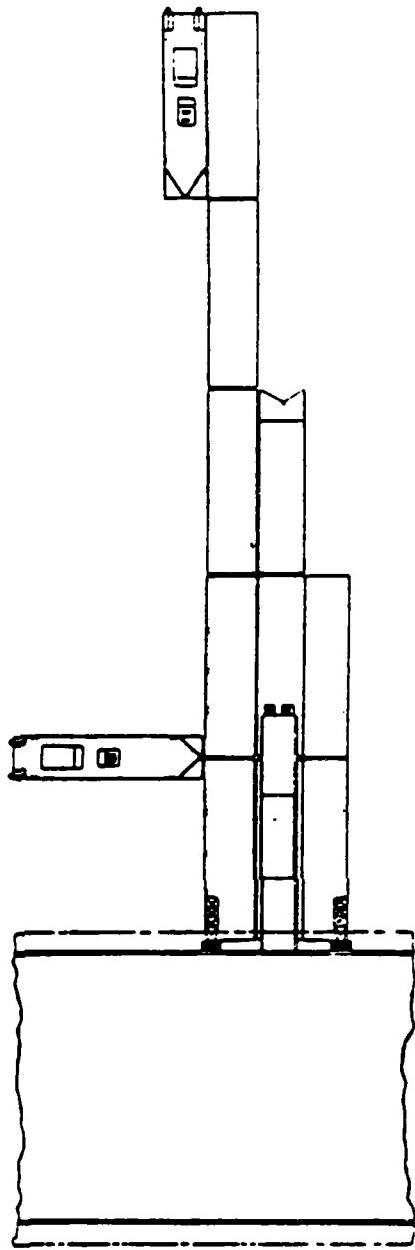
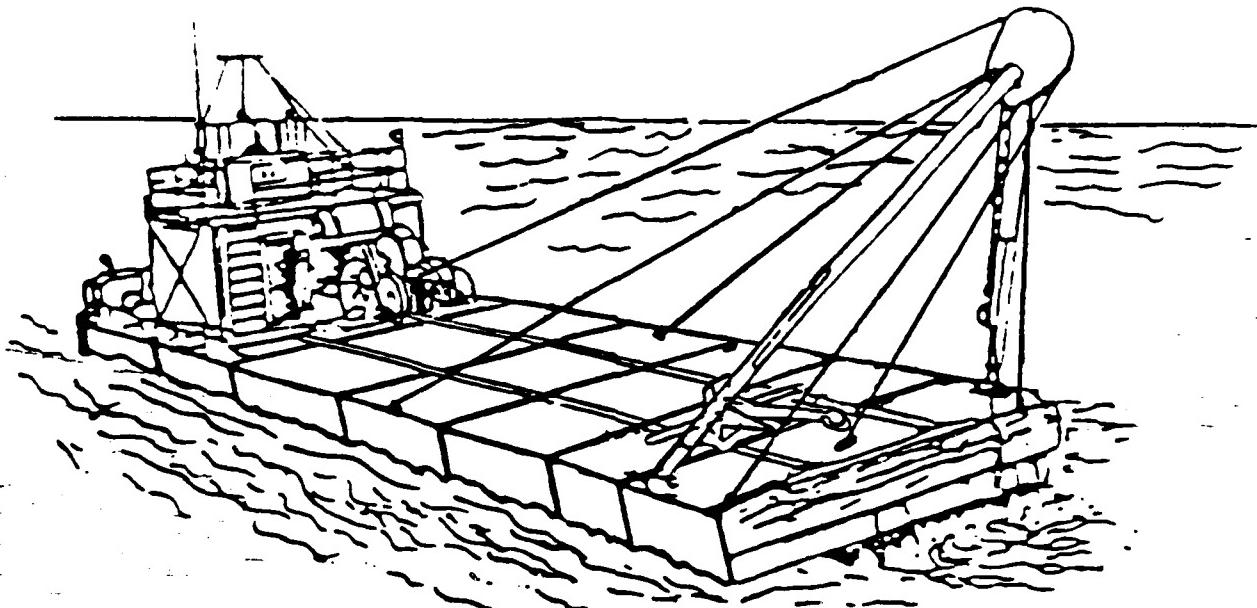


Figure 4.12a CPF/CWR Transom Port set-up (Greatland Class Ship)

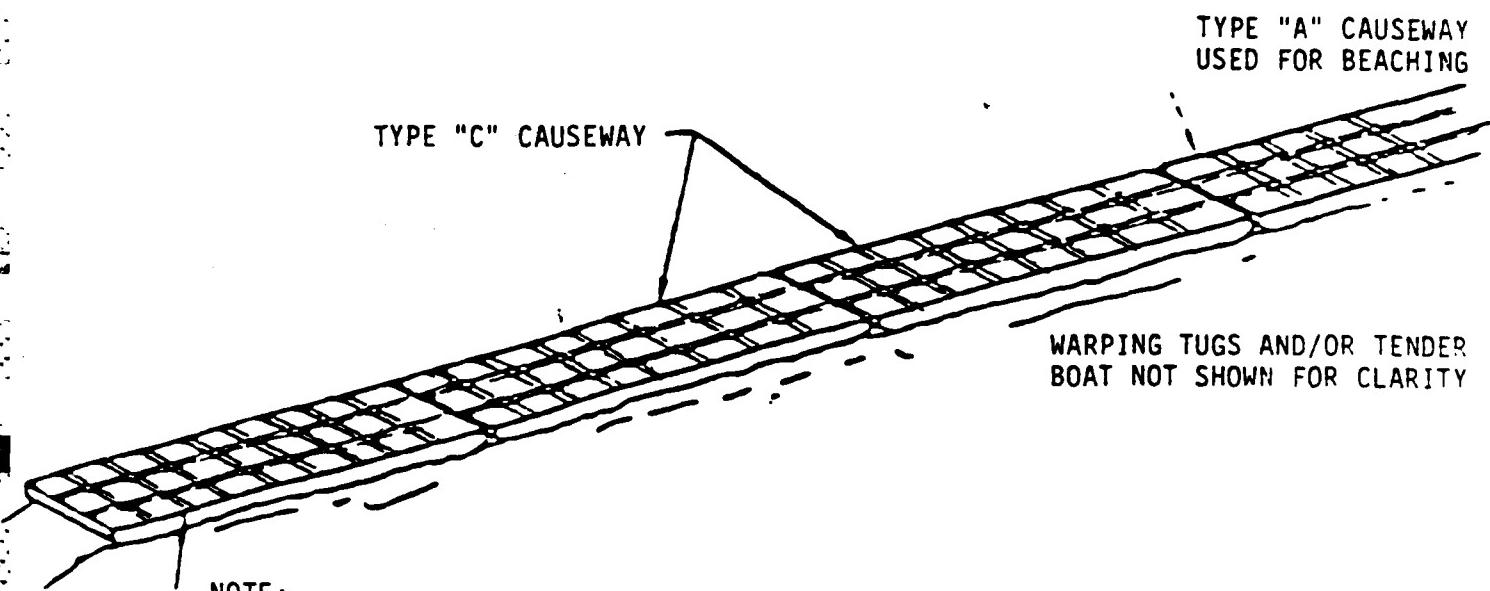
Figure 4.12b RO/RN Discharge Facility Side Port Set-up (PONCE-LURINE Class Ship)





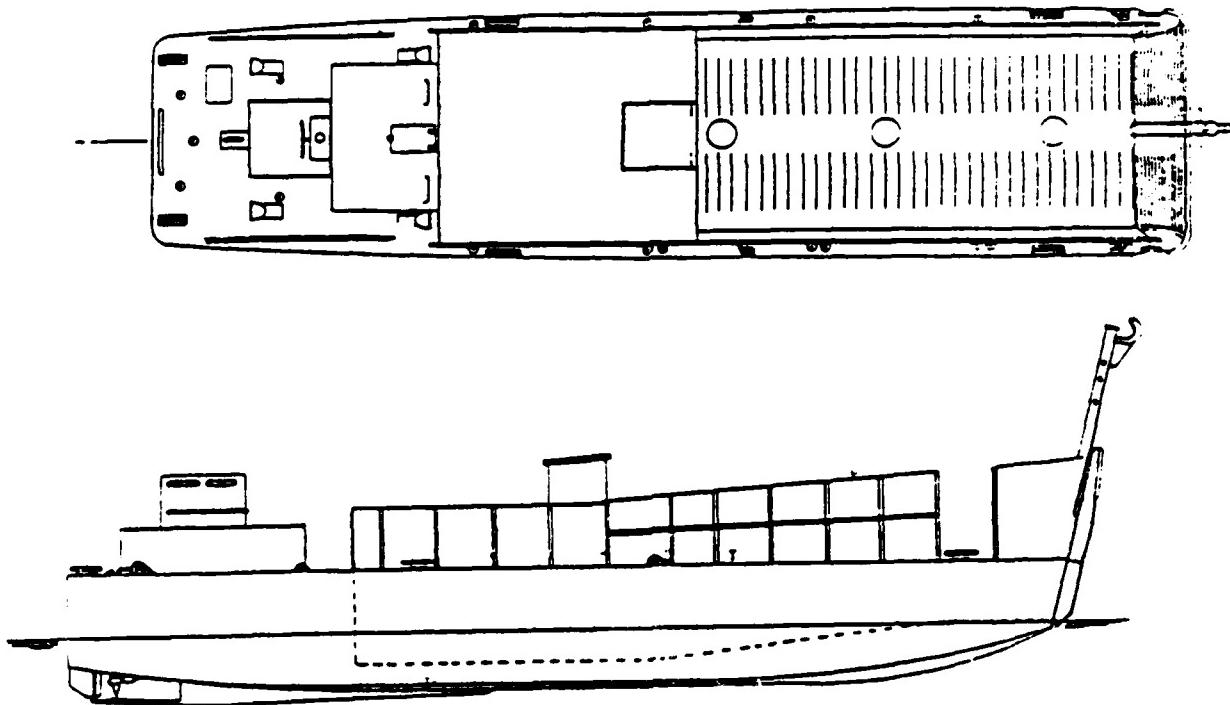
DISPLACEMENT:	120 Tons
LENGTH:	90 Feet
BEAM:	21 Feet
DRAFT:	18 inches at Bow 48 inches at Stern
PROPELLION:	2 Outboard Units 8500 Pounds thrust per Unit
SPEED:	Approx. 6 knots
WINCH:	Diesel Driven
A-FRAME:	Sheave approx. 12 Feet above Deck

Figure 4.13 Pontoon Warping Tug with Deck House



NOTE:  
IN FUTURE OPERATIONS THE AFT CAUSEWAY  
SECTION WILL BE REPLACED WITH THE  
POWERED CAUSEWAY SECTION

Figure 4.14 Causeway Ferry



LANDING CRAFT, MECHANIZED, LCM(6), MODIFIED FOR TENDERBOAT OPERATIONS

CREW ..... 3 Men  
 LENGTH OVERALL ..... 56' 1 $\frac{1}{2}$ "  
 BEAM ..... 14' 1 $\frac{1}{4}$ " Maximum  
 DRAFT ..... 3' 10" Loaded  
 HOISTING WEIGHT ..... 56,000 lbs  
 HOISTED BY ..... Slings  
 CONSTRUCTION ..... Semi-flat bottom, tunnel stern, welded steel  
 SPEED ..... 9 knots at full load displacement  
 FUEL CAPACITY ..... 450 gallons  
 RANGE ..... 130 nautical miles at full power and full load  
 ENGINE DETAILS ..... 2 - 6 cylinder diesels, 225 hp. at 2,100 r.p.m.  
                       emergency 165 hp. at 1,800 r.p.m. continuous.  
                       Gray marine model 64HN9, inboard heat exchanger,  
                       12 volt electrical system.  
 OR ..... 2 - 6 cylinder diesels, 225 hp. at 2,100 r.p.m.  
                       emergency 165 hp. at 1,800 r.p.m. continuous.  
                       Gray marine model 64HN9, hull cooled, 12 volt  
                       electrical system.  
 PROPELLER DETAILS .. 2 - 24" D by 17" P by 2" bore, rh. rotation  
 CARGO WELL ..... Approximate dimensions: 37' 6" long, 11' 0"  
                       wide, 6' 3" deep

Figure 4.15 LCM-6 Tender Boat

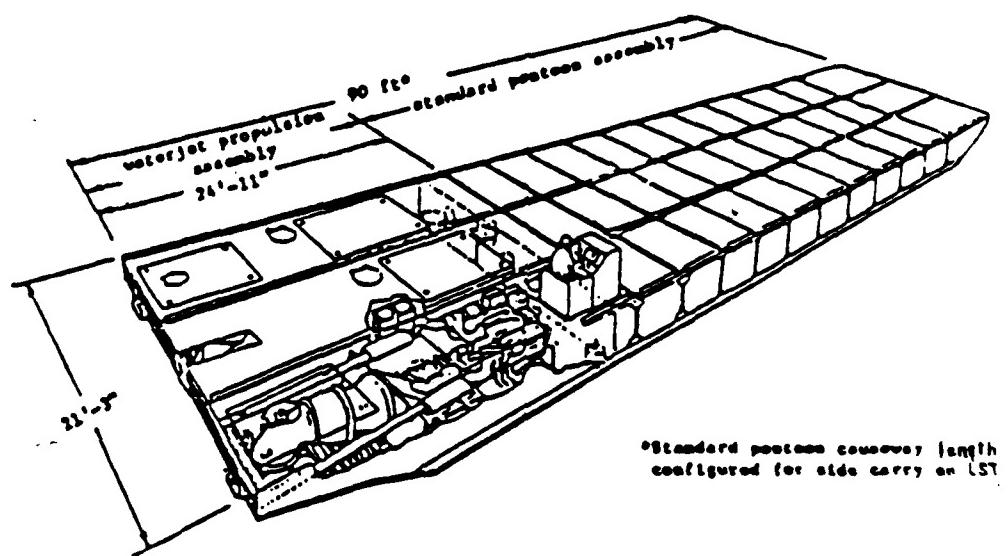
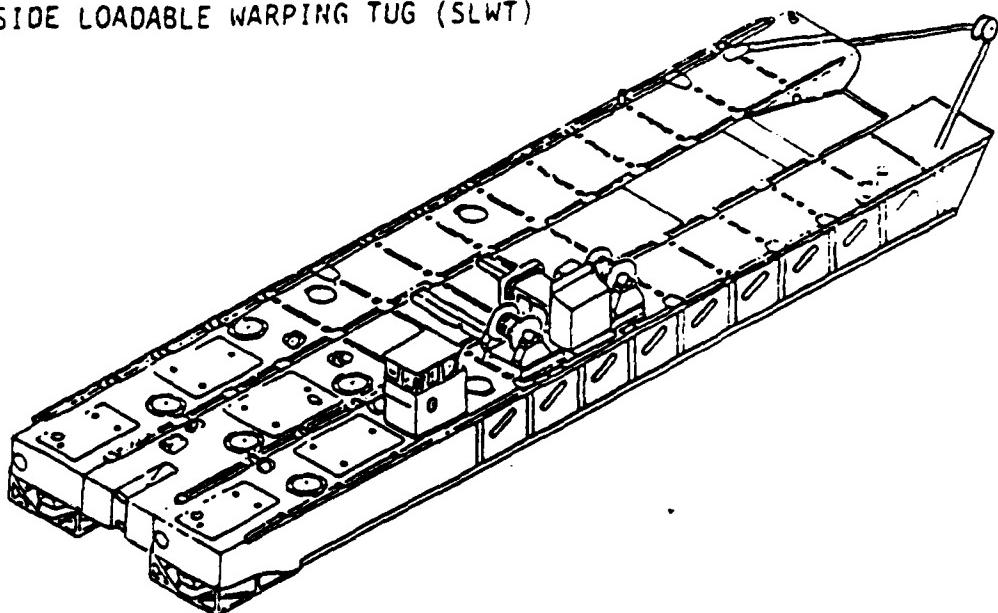
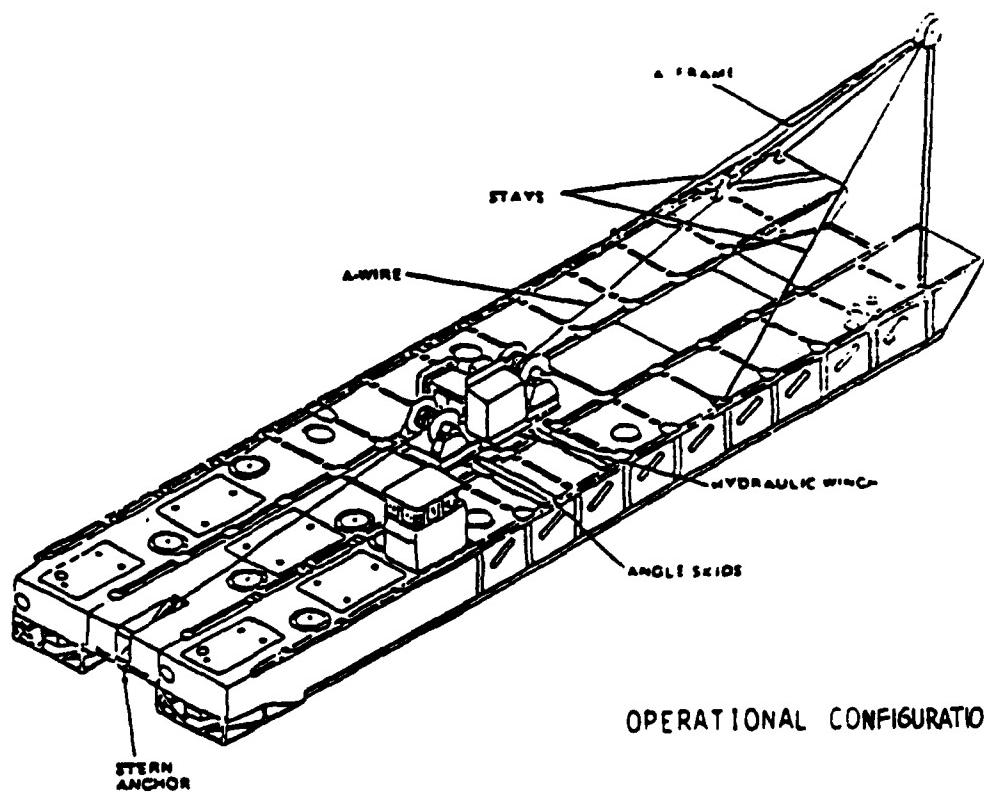


Figure 4.16 Powered Causeway Section (PCS)

SIDE LOADABLE WARPING TUG (SLWT)

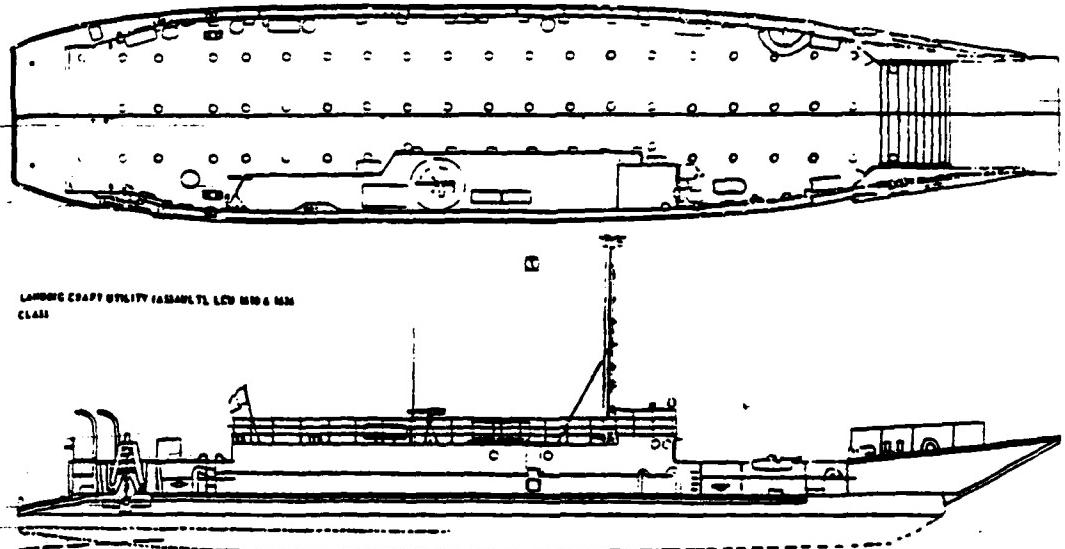


STOWED CONFIGURATION



OPERATIONAL CONFIGURATION

Figure 4.17



Purpose .....	To land and retrieve personnel and equipment (tanks, artillery equipment, motor vehicles) during amphibious operations
Capacity .....	168 tons (376,320 lbs)
Crew .....	14 men (2 CPOs, 12 enlisted men)
Length overall .....	135' - 3"
Beam .....	29' - 0"
Draft .....	3' - 3" (forward maximum landing) with 3 6' - 6½" (aft maximum landing) T-43 tanks
Full load displacement ...	342 tons (766,080 lbs) (with 3 T-43 tanks)
Hoisting weight	
Hoisted by .....	Lifting slings (3 sections individually, entire craft)
Construction .....	Flat bottom, welded steel
Speed .....	11 knots at full load displacement
Fuel capacity .....	10 tons (3,220 gallons)
Range	
NavShips Drawing No. ....	LCU 1626-800-2120963
	LCU 1626-800-2120961
	LCU 1610-800-1698376
	LCU 1610-800-1448871
Stock No. ....	Not assigned
Engine details .....	2 twin-mounted high speed diesel engines, 600 s.h.p. each at 2,100 r.p.m. Detroit Diesel Model 12007 P, 24 volt electrical system. Federal Stock Nos. S2B15-541-0117 and S2B15-541-0148
Propellers .....	2 4' - 0" D with 2 KORT nozzles, 1 rh rotation, 1 lh rotation

Figure 4.18 LCU, 1610 Class

B. SCHEDULE OF EVENTS

The schedule of test events during Phase II is arranged into four areas: preparation, test operations with SS RO/RO, reconfiguration, and test operations with NSS RO/RO. Test days with attending event numbers comprise the sequence of test events that must occur on a given test day. If test operations must cease due to weather or other conditions, test operations will resume on the next test day with the next successive event. By following this methodology personnel and other resources can be conserved to ensure the completion of all test objectives. The planned events for each test day are based upon an estimate of the test operations that can be reasonably accomplished in a 10-12 hour work shift. The JTD Operations Officer will adjust these events as necessary throughout the test in order to respond to weather delays and unforeseen problems. The detailed event schedule is shown on pages 4-11 through 4-14.

EVENT NUMBER	T-DAY	PREREQUISITE EVENT	EVENT
I-02	T-10+ T-14	NONE	Beach preparation at Blue Beach (Ft. Story) install Sand Grid and MO-MAT
I-04	T-2	NONE	Stage 100 U.S. Army and Marine Corps vehicles at NSC, Norfolk, VA. for load
I-06	T-2	NONE	Assemble RO/RO Discharge Facility Offshore for SS RO/RO
I-08	T-2	NONE	Position Lighterage at Port Story, VA.
Z-02	T-DAY	I-02	Embark 100 vehicles on SS RO/RO at NSC, Norfolk, VA.
Z-04	T-DAY	2-02	SS RO/RO sails from NSC, Norfolk and anchors off Blue Beach, Ft. Story
3-02	T-1	I-04	Install RO/RO Discharge Facility to SS RO/RO
3-04	T-1	I-06 1-08 3-02	Offload 100 vehicles via Causeway Ferries (3)
3-06	T-1	3-04	Stage 100 vehicles on shore for backload via Causeway Ferries
3-08	T-1	3-06	Backload 100 vehicles to SS RO/RO via Causeway Ferries (3)
4-02	T-2	I-06 3-02 3-08	Offload 100 vehicles via Causeway Ferries (3)
4-04	T-2	4-02	Stage 100 vehicles on shore for backload via Causeway Ferries
4-06	T-2	4-04	Backload 100 vehicles to SS RO/RO via Causeway Ferries (3)
5-02	T-3	I-06 3-02 4-06	Offload 100 vehicles via Navy/Army LCU's (6)
5-04	T-3	5-02	Stage 100 vehicles on shore for backload via LCU's (Causeway Ferries may be used, depending on the time)
5-06	T-3	5-04	Backload 100 vehicles to SS RO/RO via LCU's (Causeway Ferries may be used, depending on the time)

EVENT NUMBER	T-DAY	PREREQUISITE EVENT	EVENT
6-02	T+4	1-06 3-02 5-06	Offload 100 vehicles via LCU/Causeway Ferry mix
6-04	T+4	6-02	Stage 100 vehicles on shore for backload via LCU's and Causeway Ferries
6-06	T+4	6-04	Backload 100 vehicles via LCU's/Causeway Ferry mix
6-08	T+4	1-06 3-02 6-04	Offload 100 vehicles via LCU's/Causeway Ferry mix
6-10	T+4	6-06	Stage 100 vehicles ashore and await arrival of NSS RO/RO
N/A	T+5	N/A	Weather Day
7-02	T+6	1-06 3-02 6-06	Remove RO/RO Discharge Facility from SS RO/RO
7-04	T+6	7-02	SS RO/RO sails empty from anchorage at Ft. Story, VA
7-06	T+6	7-02	Reconfigure RO/RO Discharge Facility for use by NSS RO/RO
7-08	T+6	7-02 7-06	Lighterage remain on call for NSS RO/RO Operations
N/A	N/A	N/A	SS RO/RO Operations completed
8-02	T+7	7-06	Assemble RO/RO Discharge Facility and Ramp Offshore
8-04	T+7	7-08	Position Lighterage at Ft. Story (Blue Beach for NSS RO/RO Ops)
9-02	T+7	NONE	NSS RO/RO arrives and anchors off Blue Beach, Ft. Story
9-04	T+7	7-06 7-08 9-02	Install RO/RO Discharge Facility to NSS RO/RO
9-06	T+7	9-04	Biback 3 vehicles (1 M1 Tank, 1 DVP7, 1 MB13 with M198 Towed Howitzer) via Causeway Ferry aboard NSS RO/RO

EVENT NUMBER	T-DAY	PREREQUISITE EVENT	EVENT
9-08	T+7	9-06	Offload 3 vehicles via Causeway Ferry (1)
9-10	T+7	9-08	Backload 3 vehicles aboard NSS RO/RO via Causeway Ferry
9-12	T+7	9-10	Remove Discharge Facility from NSS RO/RO
10-02	T+8	9-12	Install Discharge Facility to NSS RO/RO
10-04	T+8	10-02	Offload 3 vehicles via LOU (1) (Day operations only) COIS Technical Evaluation
10-06	T+8	10-04	Backload 3 vehicles aboard NSS RO/RO via LOU (1) (COIS)
10-08	T+8	10-06	Remove Discharge Facility from NSS RO/RO (COIS)
11-02	T+9	10-08	Install Discharge Facility to NSS RO/RO (COIS)
11-04	T+9	11-02	Offload 3 vehicles via LOU (1)/Causeway Ferry (1) mix (Day operations only) (COIS)
11-06	T+9	11-04	Backload 3 vehicles aboard NSS RO/RO via LOU (1)/Causeway Ferry (1) mix (COIS)
11-08	T+9	11-06	Remove Discharge Facility from NSS RO/RO (COIS)
11-10	T+9	11-08	Beach Discharge Facility at Blue Beach, Ft. Story (COIS Evaluation complete)
12-02	T+10	11-08	Move Discharge Facility off Blue Beach, Ft. Story (JLOTS Test begins)
12-04	T+10	12-02	Install Discharge Facility to NSS RO/RO
12-06	T+10	12-04	Backload 97 vehicles aboard NSS RO/RO via Causeway Ferries
12-08	T+10	12-06	Offload 100 vehicles via Causeway Ferries
12-10	T+10	12-08	Stage 100 vehicles for backload
13-02	T+11	12-10	Backload 100 vehicles aboard NSS RO/RO via LOU's
13-04	T+11	13-02	Offload 100 vehicles via LOU's
13-06	T+11	13-04	Stage 100 vehicles for backload

EVENT NUMBER	T-DAY	PREREQUISITE EVENT	EVENT
14-02	T+12	13-06	Backload 100 vehicles aboard NSS RO/RO via Causeway Ferries/LOU mix
14-04	T+12	14-02	Offload 100 vehicles via Causeway Ferries/LOU's mix
14-06	T+12	14-04	Stage 100 vehicles ashore
N/A	T+13	N/A	Weather Day
N/A	T+14	N/A	Weather Day
15-02	T+15	14-06	Remove Discharge Facility from NSS RO/RO
15-04	T+15	15-02	NSS RO/RO sails empty from anchorage (JLOTS Test ends)
15-06	T+15	14-04 15-02	Shuttle tracked/outsized vehicles back to railhead, NSC, Norfolk, VA. via LOU's

V. ORGANIZATION AND RESPONSIBILITIES

A. GENERAL

This section addresses test organization, responsibilities, points-of-contact, public information, environmental protection, and policies for visitor control.

B. JOINT TEST ORGANIZATION

The Joint Test Organization is composed of a Field Test Plan Working Group for planning Phase II, JLOTS II as well as a Joint Operational Control Group for execution of test events. Composition of these groups is discussed below:

(1) Planning - Field test planning was accomplished by the Phase II, JLOTS II Field Test Plan Working Group, composed of assigned service representatives and the JTD Operations and Plans staff.

(2) Execution - Execution of this Field Test Plan shall be by operational units assigned by each service. Individual service and/or unit operation orders will be required to augment the annexes and provide sufficient detail for individual unit commanders to properly execute their responsibilities. Operational control shall be established and

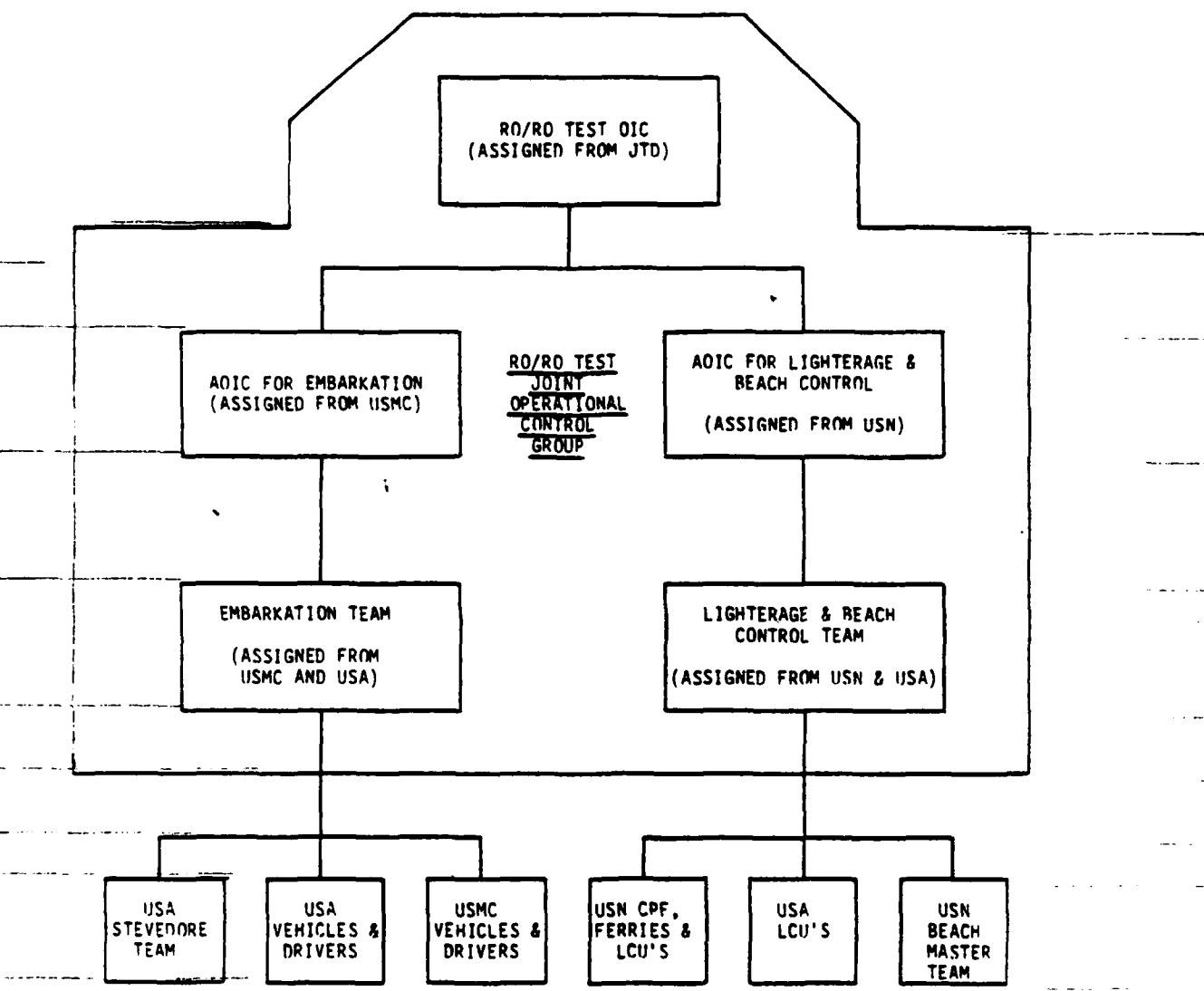


Figure 5.1 RO/RO Test Joint Test Force Organization

exercised by the RO/RO Test Officer-in-Charge (OIC) through the joint organization depicted in Figure 5.1. The OIC will be an officer assigned from the JTD. Other personnel of the joint control group will be assigned TAD from the various services. Specific numbers of personnel, grades and specialty codes, as well as periods of assignment are addressed in Annex "A".

In general, the USMC Senior Service Commander will be in operational control of all activities on the RO/RO ships including embarkation operations at pierside, debarkation operations at the anchorage, and vehicle movement from the high water mark inland at Ft. Story. The AOIC for Lighterage and Beach Control will be in operational control of all activities from the RO/RO Calm Water Offloading Facility through the boat transit lanes and the surf zone to the high water mark at the beach. Specific control mechanisms and procedures to be utilized are discussed in Annex "A".

(3) Points of Contact

JLOTS II Headquarters is located in Bldg 3007, NAB, Little Creek, Va. Autovon prefix is 680 and the commercial area code prefix is 804-464. The following members of the Joint Test Directorate may be contacted on matters related to this field test plan:

Plans and Operations

Name

Extension

Colonel D.J. Beakey, USA (USA DJTD) 7219

Capt R.L. Walker, USMC 8561

Technical Advisor's Office

Mr. Ted Vaughters, DTNSRDC, Annapolis Md. AV 281-2261

C. RESPONSIBILITIES

The general responsibilities of test participants are listed below. Additional specific logistical responsibilities are shown in Annex "G."

(1) Joint Test Director

- (a) Arrange through Military Sealift Command for RO/RO ship charter.
- (b) Coordinate any ship modifications required by the test.
- (c) Arrange through the Military Traffic Management Command for POE facilities and stevedore services.
- (d) Provide personnel for the Joint Operational Control Group as identified in Annex "A".
- (e) Direct Joint Operational Control Group in development of communication plans, beach and road improvement, and control procedures.
- (f) Arrange anchorage requirements at Ft Story, including Notice to Mariners.
- (g) Provide for all matters involving data collection and photographic coverage.
- (h) Coordinate public affairs requirements.

- (i) Provide visitors' information and control.
- (2) Commander in Chief U. S. Atlantic Fleet, Commander, U. S. Army Forces Command, and Commanding General, Fleet Marine Force, Atlantic will schedule units and equipment as required to conduct operations in accordance with this test plan. Personnel will also be provided for the Joint Operational Control Group as identified in Annex "A".
- (3) U.S. Navy and U.S. Marine Corps Units
  - (a) Plan and conduct operations in accordance with this field test plan and amphibious doctrine for the Assault Follow-on Echelon (AFOE).
  - (b) Provide the JTD with copies of all Letters-of-Instruction, Operation Orders, and other documents issued for test operations.
  - (c) Provide or arrange logistic support during test operations, except as noted in Annex "G."
  - (d) Submit reports in accordance with Section VI of this test plan.

(4) U.S. Army Units

(a) Plan and conduct operations in accordance with this field test plan and Army Doctrine for terminal/port operations.

(b) Provide the JTD with copies of all Letters-of-Instruction, Operation Orders, and other documents issued for test operations.

(c) Provide or arrange for logistic support during test operations, except as noted in Annex "G."

(d) Submit reports in accordance with Section VI of this field test plan.

D. VISITOR CONTROL

Visitor control shall be as specified in Annex "E."

E. ENVIRONMENTAL PROTECTION

An Environmental Impact Assessment has been conducted to ensure compliance with all Federal and State statutory and regulatory requirements during the execution of JLLOTS II. This document was prepared by the Facilities Engineer, Fort Eustis, VA

and is available for review at JLOTS II Headquarters. In the event planning or execution at any level reveals the possibility of adversely impacting environmental quality, a report will be made to the JTD immediately.

VI. REPORTS

Reports required of Service test participants are described below:

A. READINESS REPOrTS/SITUATION REPORT

Senior Service Commanders assigned to participate in this test will report by message to the JTD that their respective service units are ready to commence scheduled operations. Any exceptions or reservations concerning readiness on the part of the commander should be included in the report. Readiness reports shall be made 30 days and 7 days prior to execution of Phase II, and whenever, in the opinion of the commander, a report is required.

B. INCIDENT REPORTS

During the test, the JTD will be notified immediately by the most expeditious means of the circumstances and action(s) taken (or recommended) concerning the following incidents:

- (1) Serious injury or death.

(2) An unsafe condition which endangers personnel or equipment.

(3) Halt of test operations.

C. SERVICE COMMANDER'S REPORT

Senior Service Commanders will submit a letter report to the JTD within 30 days after their test operations are completed. This report should reflect an assessment of the operation to include:

(1) Problems (personnel, equipment, funding, planning, training) experienced in preparing for and executing JLOTS II PHASE II.

(2) A concise overall evaluation of test operations based upon the unit's participation.

(3) Work-around/casualty procedures used to prepare for and complete operations.

(4) Problems associated with returning to home base.

(5) Aspects of RO/RO operations which require further

test and evaluation.

D. DAILY OPERATIONS REPORT

Senior Service Commanders will be asked to provide daily input as to the status of their equipment, personnel and operations to the JTD Operations Officer during the test operations. This input will be utilized by the JTD Operations Staff in order to prepare a Daily Operations Report to the JLOTS II Joint Test Director.

#### ACRONYMS AND ABBREVIATIONS

ALS	Amphibious Logistics System (USN System)
AMSS	Advanced Multipurpose Surfacing System
AFOE	Assault Follow-on-Echelon
CSSD-27	Combat Service Support Detachment - 27
DDT&E	Director Defense Test and Evaluation
DTD	Deputy Test Director
DTNSRDC	David W. Taylor Naval Ship Research and Development Center
ELCAS	Elevated Causeway System
FLS	Field Logistics System (USMC System)
JLOTS	Joint Logistics-Over-the-Shore
JTD	Joint Test Director
JTE	Joint Test and Evaluation
LACV 30	Lighter Air Cushioned Vehicle, 30 Ton Capacity
LARC LX	Lighter Amphibious Resupply Cargo, 60 Ton Capacity
LCU	Landing Craft, Utility
LOTS	Logistics-Over-the-Shore (ARMY System)
MHE	Material Handling Equipment
MOMAT	Fiberglass reinforced material used for assault trackways
MSC	Military Sealift Command
NSS RO/RO	Non-Self Sustaining Roll-On/Roll-Off ship
NCEL	Navy Civil Engineering Laboratory
OIC	Officer-in-Charge

OPORD	Operation Order
PAO	Public Affairs Officer
PC/W	Powered Causeway
POE	Port of Embarkation
RO/RO	Roll-On/Roll-Off ship
SLWT	Side Loadable Warping Tug
SS RO/RO	Self-Sustaining Roll-On/Roll-Off ship

REFERENCES

A. Under Secretary of Defense (Research and Engineering)

Memorandum of 14 December 1981. Charter for JLOTS II JTE  
Program.

B. Joint Test Director Joint Logistics Over-The-Shore II Test  
and Evaluation JLOTS II Test Design January 1983.

C. Joint Test Director Joint Logistics Over-The-Shore II Phase  
II Data Management Plan.

## ANNEX A ROLL-ON/ROLL-OFF FIELD TEST PLAN

### OPERATIONAL CONTROL OF TEST FORCES

#### I. GENERAL

A. Background - As a result of coordination with all participating services, a Joint Test Force directing staff will be established to execute all facets of this test. Accordingly, this Annex reflects the manner in which this test force staff is organized and defines the relationships between the Services and the JTD. This test force staff will be referred to as the Joint Operational Control Group (JOCG).

B. Scope - The four main areas of control to be addressed in this Annex are the organization of the Joint Operational Control Group, the specific duties and areas of control for participating Services, the role of Senior Service Commanders, and specific control procedures.

## **II. ORGANIZATION OF JOINT OPERATIONAL CONTROL GROUP (JOCG)**

A. Personnel provided by the Services must be well qualified, experienced officers/non-commissioned officers who can function as team members of the JOCG with a minimum of direction and supervision. Senior Service Commanders will nominate individuals to fill these positions not later than 30 days prior to T-Day. Additionally, these personnel must be available for planning meetings conducted by the JTD well in advance of the actual test.

B. The numbers, grades, military occupational specialty, and period of assignment for the JOCG are shown in Figure A-1.

## **III. RO/RO TEST OFFICER IN CHARGE (OIC)**

The OIC for the RO/RO test will be an officer from the Joint Test Directorate. He is responsible to the Joint Test Director (through the JTD Plans and Operations Officer) for successful execution of this Field Test Plan. The OIC will discharge these responsibilities during the planning, execution, and after-action portion of the test through subordinate teams organized to control embarkation and lighterage/beach control operations (see Figure A-1).

#### **IV. EMBARKATION TEAM**

The Embarkation Team has responsibility for test functions related to staging vehicles, loading the ship, preparing vehicles to off-load, and vehicle routing from the beach to individual service-controlled staging areas at Ft. Story. Specifically, the Embarkation Team has responsibility for the deck area of the RO/RO ship (excluding the ramps), roadways beyond the high water mark, and the staging area for test vehicles. In addition to the areas identified above, the Embarkation Team is responsible for coordinating the staging area at Naval Supply Center, Norfolk, VA.

A. Planning Considerations - To assist the Embarkation Team in developing the staging and load plans, the following guidance is provided:

(1) All staging plans during each test day should be identical, i.e. all vehicles will be in the same order throughout the test. These plans may be modified during the test due to vehicle breakdowns or other unforeseen problems.

(2) Each offload event will have all vehicles offloaded from the RO/RO ship. Normally, no backload will commence until all vehicles are offloaded and staged in proper order.

(3) Load plans must provide for adequate transit and turning areas on board each ship.

(4) A recovery vehicle and qualified operators must be available on board each ship in order to respond to vehicle breakdown and insure traffic flow from ship to ramp.

B. Operational Consideration - During execution of the test, the Commanding Officer, Combat Service Support Detachment 27 (CO, CSSD-27) must position his subordinates at key locations in order to insure vehicle flow. The CO, CSSD-27 shall maintain radio contact with his key personnel as well as the Test OIC and the AOIC for Lighterage and Beach Operations in accordance with Annex B.

C. Duties Related to Test Operations - Specific duties for the Embarkation team are provided in Figures A-2 and A-3. These listings are guides to events as planned before actual execution of the test. During the test the JTD and his staff will closely monitor operations and modify these events if weather, sea conditions, or other unforeseen conditions dictate a change in

plans. These changes will be discussed at the Daily Operations Meeting conducted on behalf of the JTD by the Plans and Operations Officer. All test supervisory personnel will attend this Daily Operations Meeting which will be conducted at the end of each test day. Periods of assignment noted in figure A-1 may be reduced by the RO/RO Test OIC as conditions permit.

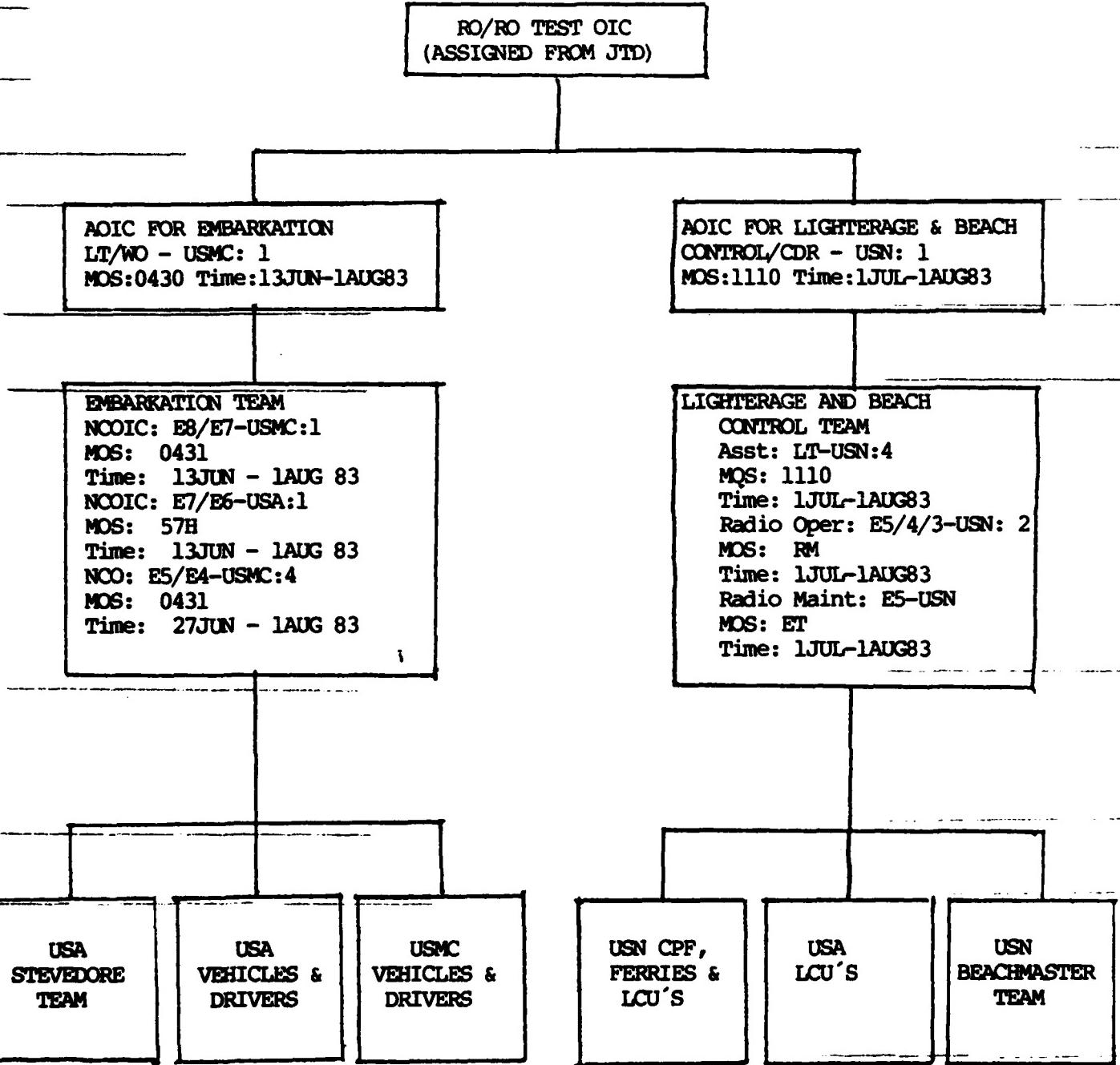


Figure A-1 - JOINT OPERATIONAL CONTROL GROUP ORGANIZATION

SPECIFIC DUTY	T-DAY	TEST EVENT NUMBER
Stage 100 USA/USMC vehicles at NSC, Norfolk, VA for load at pier	T-2	1-02
Embark 100 vehicles on SS RO/RO at NSC, Norfolk, VA.	T-DAY	2-02
Offload 100 vehicles at Blue Beach, Ft. Story	T+1	3-04
Stage 100 vehicles for backload	T+1	3-06
Backload 100 vehicles to SS RO/RO	T+1	3-08
Offload 100 vehicles at Blue Beach, Ft. Story	T+2	4-02
Stage 100 vehicles for backload	T+2	4-04
Backload 100 vehicles to SS RO/RO	T+2	4-06
Offload 100 vehicles at Blue Beach, Ft. Story	T+3	5-02
Stage 100 vehicles for backload	T+3	5-04
Backload 100 vehicles to SS RO/RO	T+3	5-06
Offload 100 vehicles at Blue Beach, Ft. Story	T+4	6-02
Stage 100 vehicles for backload	T+4	6-04
Backload 100 vehicles to SS RO/RO	T+4	6-06
Offload 100 vehicles at Blue Beach, Ft. Story	T+4	6-08
Stage 100 vehicles ashore and await arrival of NSS RO/RO	T+4	6-10

Figure A-2, Duties of the Embarkation Team, RO/RO Ship with ramp

SPECIFIC DUTY	T+DAY	TEST EVENT NUMBER
Backload 3 vehicles to NSS RO/RO	T+7	9-06
Offload 3 vehicles at Blue Beach, Ft. Story	T+7	9-08
Backload 3 vehicles to NSS RO/RO	T+7	9-10
Offload 3 vehicles at Blue Beach, Ft. Story	T+8	10-04
Backload 3 vehicles to NSS RO/RO	T+8	10-06
Offload 3 vehicles at Blue Beach, Ft. Story	T+9	11-04
Backload 3 vehicles to NSS RO/RO	T+9	11-06
Backload 97 vehicles to NSS RO/RO	T+10	12-06
Offload 100 vehicles at Blue Beach, Ft. Story	T+10	12-08
Stage 100 vehicles for backload	T+10	12-10
Backload 100 vehicles to NSS RO/RO	T+11	13-02
Offload 100 vehicles at Blue Beach, Ft. Story	T+11	13-04
Stage 100 vehicles for backload	T+11	13-06
Backload 100 vehicles to NSS RO/RO	T+12	14-02
Offload 100 vehicles at Blue Beach, Ft. Story	T+12	14-04
Stage 100 vehicles ashore	T+12	14-06
Backload Tracked/Outsized vehicles for return to Railhead, NSC, Norfolk, VA.	T+13	15-06

Figure A-3, Duties of Embarkation Team, RO/RO Ship with ramp

V. LIGHTERAGE AND BEACH CONTROL TEAM

The Assistant Officer-in Charge (AOIC), Lighterage and Beach Control Team and his assistants have responsibility for the test functions related to the RO/RO Discharge Facility, lighterage, and the beach area. Specifically, the AOIC is responsible for installing the vehicle offloading ramps on RO/RO ships, directing vehicles between the ramp and lighterage, installing and removing the RO/RO Discharge Facility, and controlling the boat lanes/beach area. Additionally, he is responsible for salvage operations, beach roadway maintenance, U.S. Army divers, and control of all visitor craft involved in this test.

A. Planning Considerations - To assist the AOIC for Lighterage and Beach Control, the following guidance is provided:

(1) There will be 3 landing sites at Blue Beach, Ft. Story. Landing sites will be 300 feet apart. Annex E provides details concerning landing sites.

(2) The boat lanes established in Annex E serve as a planning guide in establishing exact routes.

(3) Salvage and recovery teams must be available to maintain continuity of operations. Additionally, traffic control and lighting for night operations must be planned for.

(4) The AOIC for Lighterage and Beach Control will ensure that Army divers are stationed aboard attending craft by the RO/RO Discharge Facility to respond immediately to any emergency situation involving personnel and equipment falling overboard.

B. Operational Considerations - During execution of the test, the AOIC must position his team at key locations in order to maintain a constant flow of lighterage between ship and shore. The AOIC should maintain radio contact with his key personnel, the Test OIC, and the CO, CSSD-27 for Embarkation in accordance with Annex B.

C. Duties Related to Test Operations - Specific duties for the Lighterage and Beach Control Teams are in Figures A-4 and A-5. As in the case of the Embarkation Team, these listings are a guide and may be modified by the Joint Test Director during actual execution, if required.

SPECIFIC DUTY	T-DAY	TEST EVENT NUMBER
Assemble Causeway Platform Facility offshore for SS RO/RO	T-2	1-04
Position Lighterage at Ft. Story	T-2	1-06
Install Causeway Platform Facility to SS RO/RO	T+1	1-06
Causeway Ferry Operations (Offload)	T+1	3-02
Causeway Ferry Operations (Backload)	T+1	3-08
Causeway Ferry Operations (Offload)	T+2	4-02
Causeway Ferry (Backload)	T+2	4-06
LCU Operations (Offload)	T+3	5-02
LCU Operations (Backload)	T+3	5-06
LCU/Causeway Ferry Mix Operations (Offload)	T+4	6-02
LCU/Causeway Ferry Mix Operatons (Backload)	T+4	6-06
LCU/Causeway Ferry Mix Operations (Offload)	T+4	6-08
Remove Causeway Platform Facility from SS RO/RO	T+6	7-02
Lighterage remains on call for NSS RO/RO	T+6	7-08
Assemble Causeway Platform Facility with Calm Water Ramp offshore	T+7	8-02
Position Lighterage for NSS RO/RO Ops	T+7	8-04
Install CPF/CWR to NSS RO/RO	T+7	9-04
Causeway Ferry Ops (Backload)	T+7	9-06
Causeway Ferry Ops (Offload)	T+7	9-08
Causeway Ferry Ops (Backload)	T+7	9-10
Remove CPF/CWR from NSS RO/RO	T+7	9-12

Figure A-4, Duties of the Lighterage and Beach Control Group Team, RO/RO Ship with Ramp

SPECIFIC DUTY	T-DAY	TEST EVENT NUMBER
Install CPF/CWR to NSS RO/RO	T+8	10-02
LCU Ops (Offload)	T+8	10-04
LCU Ops (Backload)	T+8	10-06
Remove CPF/CWR from NSS RO/RO	T+8	10-08
Install CPF/CWR to NSS RO/RO	T+9	11-02
LCU/Causeway Ferry Ops (Offload)	T+9	11-04
LCU/Causeway Ferry Ops (Backload)	T+9	11-06
Remove CPF/CWR from NSS RO/RO	T+9	11-08
Beach CPF/CWR at Blue Beach, Ft. Story	T+9	11-12
Move CPF/CWR off Blue Beach, Ft. Story	T+10	12-02
Install CPF/CWR to NSS RO/RO	T+10	12-04
Causeway Ferry Ops (Backload)	T+10	12-06
Causeway Ferry Ops (Offload)	T+10	12-08
LCU Ops (Backload)	T+11	13-02
LCU Ops (Offload)	T+11	13-04
LCU/Causeway Ferry Ops (Backload)	T+12	14-02
LCU/Causeway Ferry Ops (Offload)	T+12	14-04
Remove CPF/CWR from NSS RO/RO	T+13	15-02
Shuttle Tracked/Outsized vehicles back to to NSC, Norfolk, VA. via LCU's	T+13	15-06

Figure A-5, Duties of the Lighterage and Beach Control Group Team, RO/RO Ship without ramp

## VI. SENIOR SERVICE COMMANDERS

Senior Service Commanders are responsible for the overall administrative and logistical support of their personnel and equipment involved in this test. Senior Service Commanders must ensure that all personnel and equipment are available to conduct test operations. If situations arise that require a decision to be made by the Joint Test Director (JTD), Senior Service Commanders have direct access to the JTD for consultation.

## VII. DATA COLLECTORS

All Data Collectors to be used during this test will be under the cognizance and control of the Joint Test Directorate Data Manager and will function under the procedures outlined in the Data Management Plan (Reference C).

## VIII. SPECIFIC CONTROL MECHANISMS AND PROCEDURES

A. Traffic Control On Board Ship - The Embarkation Team will coordinate the traffic control patterns on both RO/RO ships with the ship's crew to ensure that safe and expeditious offload/backload operations are accomplished. The Embarkation Team shall coordinate his plans and patterns with the AOIC for lighterage and beach control

to ensure smooth operation at the Discharge Facility for which the latter has planning responsibility. Traffic control patterns will be specified in each load plan contained in Annex D.

B. Traffic Control on RO/RO Discharge Facility - The AOIC for Lighterage and Beach Control will establish procedures to direct and control all vehicle and personnel movement on the RO/RO Discharge Facility. His plans shall be made so as to coordinate smoothly with those of the Embarkation Team.

C. Boat Lanes - The AOIC for Lighterage and Beach Control will establish boat lanes, queing areas, and traffic patterns for all lighterage used during the test. Annex E will be used as a guide for detailed planning.

D. Beach Layout - The AOIC for Lighterage and Beach Control is responsible for the beach layout at Blue Beach, Ft. Story. Annex E will be used as a guide for detailed planning.

E. Road Network Control - The CO, CSSD-27 will ensure that all vehicle drivers adhere to the road network pattern contained in Annex E.

F. Staging Areas - The CO, CSSD-27 will be responsible for the establishment of staging areas at NSC, Norfolk, VA. and the cargo area indentified in Annex E at Ft. Story.

G. Retrograde - The CO, CSSD-27 will ensure that all retrograde operations conform with established staging and load plans. In the event a vehicle is dropped from the load plan due to mechanical failure, spaces will be closed as much as possible.

H. Marking of Vehicles - All vehicles used during the RO/RO test will have a unique number stenciled on the front, sides, and rear so that Data Collectors may easily identify it. The U. S. Marine Corps vehicles used during the test will have an "M" designator assigned to the unique number. For example, numbers "1-50 M" will be used for Marine Corps vehicles. The U. S. Army vehicles used during the test will have an "A" designator assigned to the unique number. For example, numbers "51-120A" will be used for Army vehicles. The AOIC for embarkation is responsible for marking all vehicles at the staging area, NSC, Norfolk, VA. The unique numbers will be 10 inches high and taped on vehicles so that they may be easily seen.

I. Movement of Personnel to RO/RO Ships - The AOIC for Lighterage and Beach Control is responsible for the movement of personnel from Blue Beach, Ft. Story to the RO/RO ships and return. The personnel to be moved are as follows:

- (1) Embarkation Team
- (2) U. S. Army Stevedore Platoon
- (3) USMC and USA vehicle drivers
- (4) Data Collectors
- (5) JTD Staff
- (6) Other personnel required to accomplish test objectives.

The AOIC for Lighterage and Beach Control will provide life jackets for all personnel being moved on lighters and on the RO/RO Discharge Facility. All personnel boarding the RO/RO Ships will use the ship's accommodation ladder rather than using the vehicle loading/offloading ramps.

J. Timing of Test Events - As shown in Figure A-6, each test event has a beginning and end for data collection purposes.

DEFINITION OF PHASE II TEST EVENTS

TEST EVENT	EVENT STARTING POINT/CONDITION	EVENT COMPLETED/END POINT
1. Facility Assembly a. Facility w/ramp	Causeway sections, ramp, fenders, tugs, and personnel are in position ready to begin assembly	Facility completely assembled, and tugs are in position ready to transport it to a RO/RO ship for use
b. Facility without ramp	Causeway sections, tugs, and personnel are in position to begin assembly	Facility completely assembled ready, and tugs are in position to move it to a RO/RO ship for use
2. Facility Reconfiguration a. W/ramp to NSS RO/RO	Assembled facility is at reconfiguration site: ramp on the facility, fenders installed and tugs and personnel are in position	Facility is in a without ramp configuration (ramp and fenders removed) and tugs are in position ready to be moved to the NSS RO/RO ship
b. Without ramp to SS RO/RO	Assembled facility is at reconfiguration location, ramp and fenders are in position to be installed, tugs and personnel are in position	Facility is in a with ramp configuration (fenders installed and ramp sections assembled on the facility) tugs are in position ready to move to the SS RO/RO ship
3. Beaching	Facility 50' from the beach	Facility moved onto the beach, secured, and all tug moorings removed
4. Movement	Facility in position with all ship or anchor mooring removed	In final position with all tug moorings still attached
5. Installation	Facility 50' from ship ready for final approach	Positioned ready to offload vehicles. Facility moored to ship, tugs maintain facility position with respect to the ship, and the ship's ramp positioned on the facility ready for vehicle offloading

Figure A-6

**DEFINITION OF PHASE II TEST EVENTS (CONTINUED)**

TEST EVENT	EVENT STARTING POINT/CONDITION	EVENT COMPLETED/END POINT
b. NSS RO/RO ramp	Facility 50' from ship ready for final approach	Positioned ready to offload vehicles. Facility moored to the ship, and the facility ramp raised and attached to the ship.
6. Removal a. SS RO/RO	Facility moored to ship, ship's ramp positioned on facility, and tugs in position	When the facility begins movement away from the ship, or is all prepared to be moved away from the ship
b. NSS RO/RO	Facility fendered to ship, facility ramp installed on NSS RO/RO ship, and tugs in position	When the facility begins movement away from the ship, or is all prepared to be moved away from the ship
7. Vehicle Movement a. Offloading	First movement of the vehicle onto the facility/ship's ramp	Vehicle is clear of the lighter at the beach
b. Backloading	First movement of the vehicle onto the lighter at the beach	Vehicle clears the top of the ramp and enters the ship

Figure A-6 (page 2)

ANNEX B PHASE II FIELD TEST PLAN

COMMUNICATIONS

I. GENERAL

A. Purpose - To prescribe procedures and delineate responsibilities for the establishment and maintenance of communication networks.

B. Scope - This communications plan is effective only for Phase II of JLOTS II, Roll-On/Roll-Off test.

II. RESPONSIBILITIES

A. Joint Test Directorate - The Deputy Director for Operations will designate radio and wire communications nets IAW Appendixes 1 through 5 to Annex B.

B. Navy Senior Service Representative will:

(1) Provide necessary communications equipment to operate and/or enter designated communications nets.

(2) Coordinate the distribution of assigned radio frequencies.

C. Marine Corps Senior Service Representative will:

(1) Provide necessary communications equipment to operate and/or enter designated communications nets.

(2) Provide tactical wire communications equipment for wire net.

(3) Provide communications equipment to JTD as required.

D. Army Senior Service Representative will:

(1) Provide necessary communications equipment to operate and/or enter designated communications nets.

### III. Procedures

A. General - Communications support to the Joint Operations Control Group and operating units will be provided by participant's organic assets.

B. Wire - The higher to lower concept of responsibility for wire lines will be followed unless otherwise directed.

Telephones and switchboard are the responsibility of the unit receiving the service. If an instrument is not available, assistance in coordinating instrument use will be provided by the JTD. To insure compatibility of equipment, Marine Corps Senior Service Representative will coordinate installation of wire equipment. Installation of Class 'C' telephones must be coordinated with Ft. Eustis (DPTSEC) prior to arrival at Ft. Story.

C. Radio - The Net Control Stations (NCS) will keep traffic to a minimum. Call signs and frequencies may be announced over the air. When entering or leaving a net the NCS will be notified. Designated radio nets for the Roll-On/Roll-Off test are:

(1) Joint Operations Control Group Radio Net - The primary communication network between the JTD Operations OIC and the principal assistants, the Lighterage and Beach Control Team

OIC, and the Embarkation Team OIC. This net will be utilized to control the overall operation and coordinate operations between the Lighterage and Beach Control Team and the Embarkation Team. (See Appendix 1)

(2) Embarkation Team Radio Net - The radio net established to provide communication between the Embarkation Team AOIC, ship, and shore elements of the team. This net will facilitate coordination of vehicle movement between the mar shalling yard and the beach and vice versa, and on board the RO/RO vessel. (See Appendix 2)

(3) Lighterage Control Team Radio Net - The radio net established to provide communication between the Lighterage Control Team AOIC, all watercraft, and the beachmaster. This net is used to coordinate and direct all lighterage movements, beach landings, and tug boat operations. (See Appendix 3)

(4) Beach Control Radio Net - The radio net establish to provide communication between the Beachmaster, lighterage and the Lighter Control Team. The primary purpose of this net is to direct beach landings and lighter loading and unloading on the beach. (See Appendix 4)

(5) Convoy Radio Net - The radio net established to provide communication for wheel vehicle convoys transiting between home stations, POD's, and Fort Story. This net may not be required if vehicles are moved in small groups (less than five traveling together). (See Appendix 6)

(6) Causeway Ferry Maneuvering Nets (3) - Internal radio nets for causeway barge ferry pilots to give rudder and maneuvering orders to warping tugs and tender boats. Each barge ferry will have a separate frequency.

(7) RO/RO Discharge Facility Platform Maneuvering Net - Internal radio net for platform pilot to give rudder and maneuvering orders to warping tugs and tender boats.

Call Signs and Frequencies for major operating units are provided in Table B-1. Other call signs and frequencies will be as specified in service-communications-electronics operating instructions.

ORGANIZATION	CALL SIGN	OPERATING NETS				BARGE FERRY INTERNAL NETS			PLATFORM MANEUVERING FREQ
		JOCG FREQ 46.65	EMBARK FREQ 40.40	LIGHTERS FREQ 32.65	BEACH FREQ 49.80	RED FREQ 32.85	GREEN FREQ 38.50	WHITE FREQ 49.845 OR 32.95	
JID OPS	JLOIS	C							
LIGHTER CONTROL	BORT COMMANDER	X	X	C	X				
EMBARKATION		X	C	X	X				
BEACHMASTER TEAM	BLUE BEAT	X	X	X	C				
NAVY LOU'S	UNIFORM + HULL#				X	X			
ARMY LOU'S					X	X			
LARC-60					X	X			
WARPING TUGS	WHISKEY TANGO + HULL #				X	X			X
CAUSEWAY FERRY PILOT	BARGE FERRY RED/GREEN/WHITE				X	X	C	C	
CAUSEWAY PLATFORM PILOT	SEABEE PLATFORM				X				C
NAVY TENDER BORT	BUBBLE GUM + HULL #				X	X	X	X	X
STEVEDORE PILOT				X					
MARSHALLING YARD				X					
RO/RO SHIP MASTER	(SHIP'S NAME)				X				

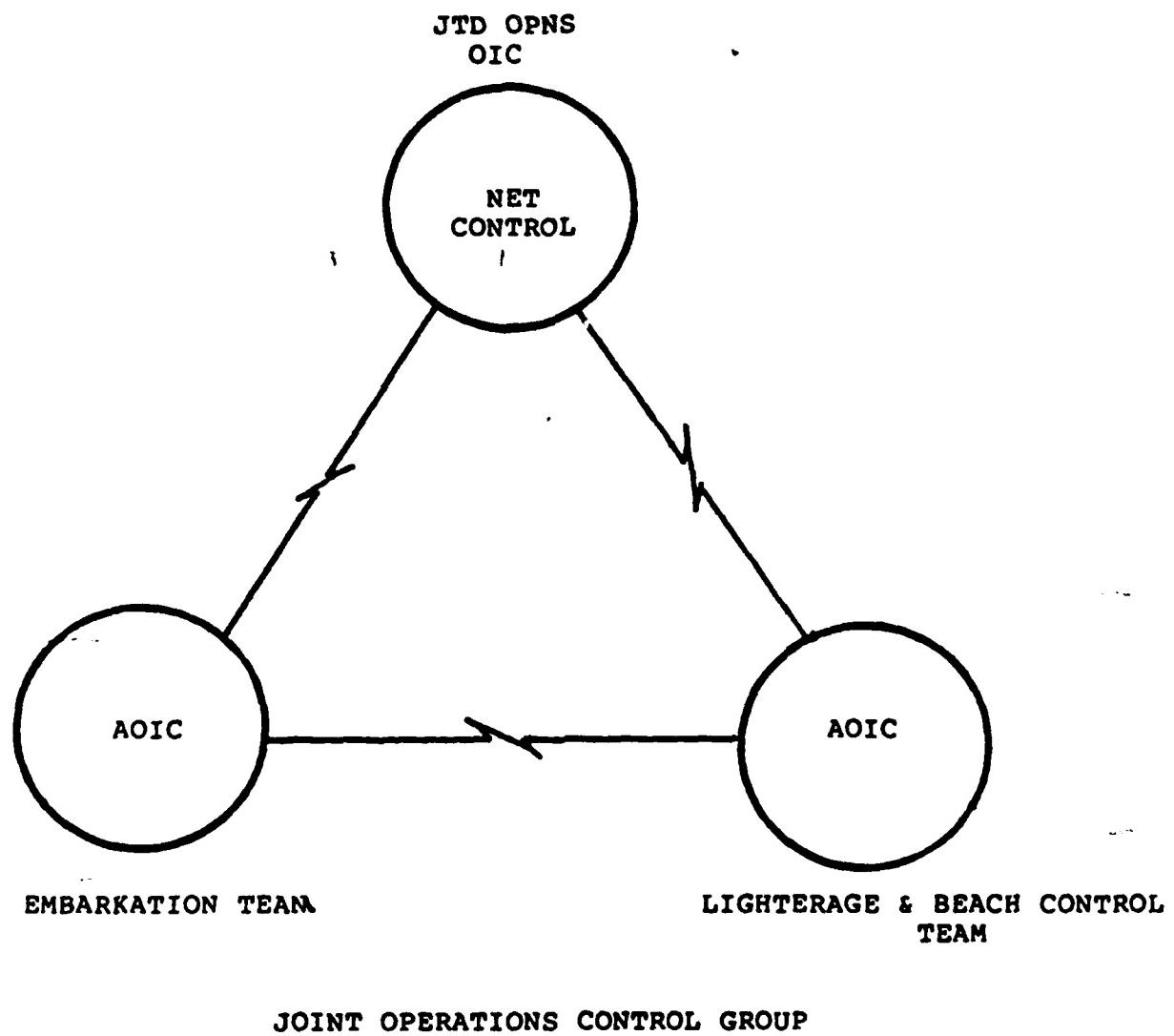
C = CONTROL

X = MONITOR

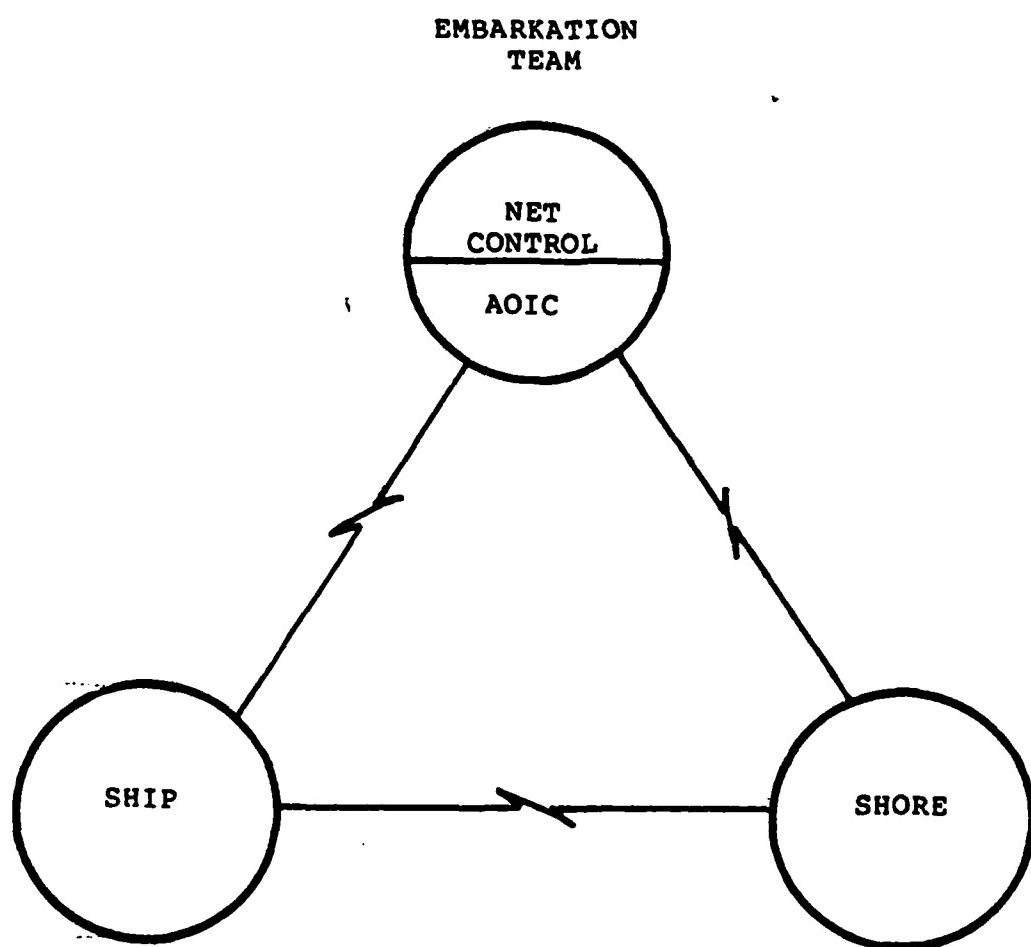
D. Coordinating Instructions - Communications

requirements not covered in this Annex will be coordinated upon receipt of the Field Test Plan. Maintenance of communications equipment is the responsibility of owning units. Units will comply with the safety requirements of their Standing Operating Procedures on Communications-Electronics. For start and end times for communications use, see Annex A.

APPENDIX 1 (JOINT OPERATIONS CONTROL GROUP RADIO NET) TO ANNEX B  
(COMMUNICATIONS) TO PHASE II ROLL-ON/ROLL-OFF FIELD TEST PLAN

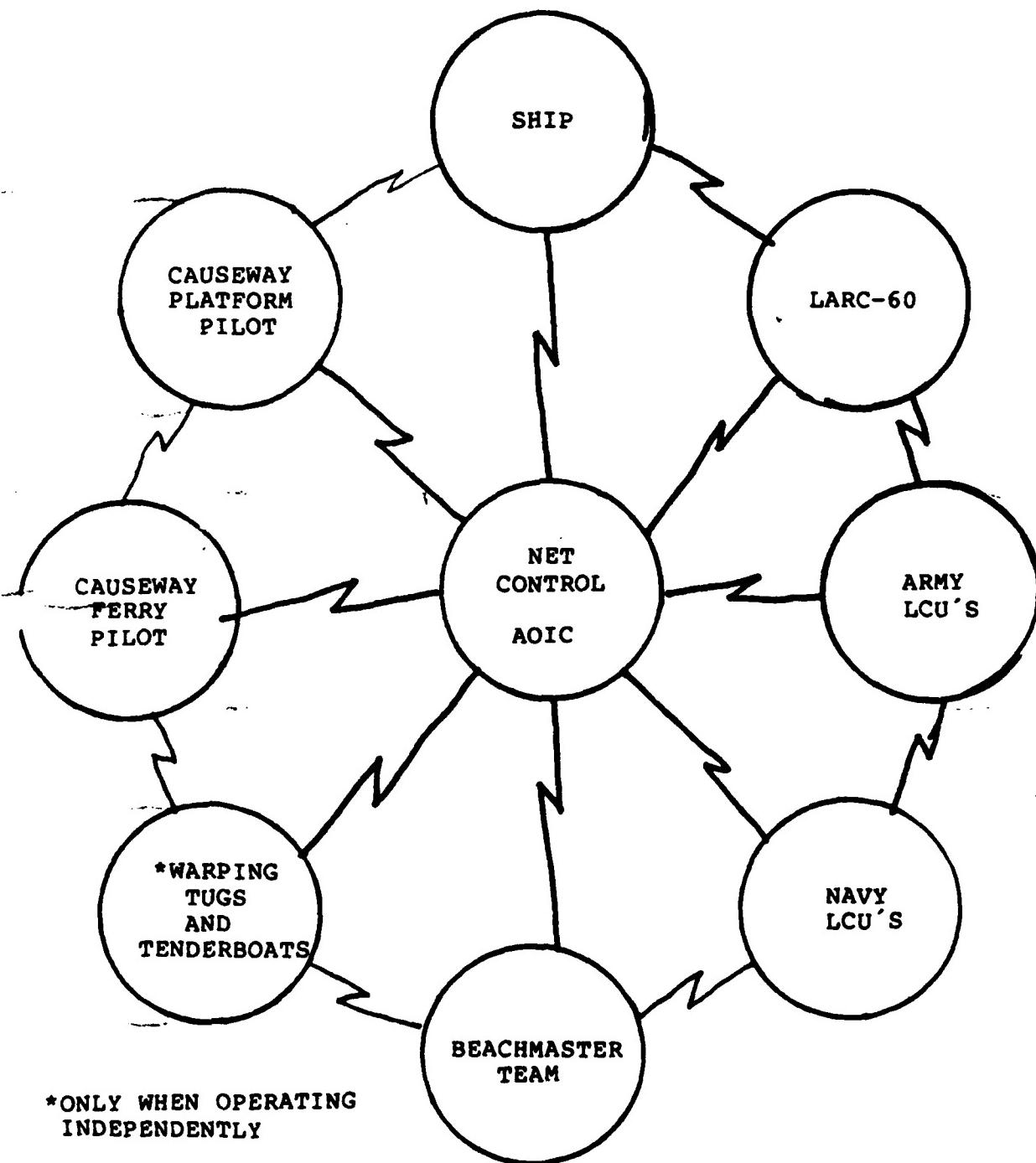


APPENDIX 2 (EMBARKATION TEAM RADIO NET ) TO ANNEX B (COMMUNICATIONS)  
TO PHASE II ROLL/ON/ROLL-OFF FIELD TEST PLAN



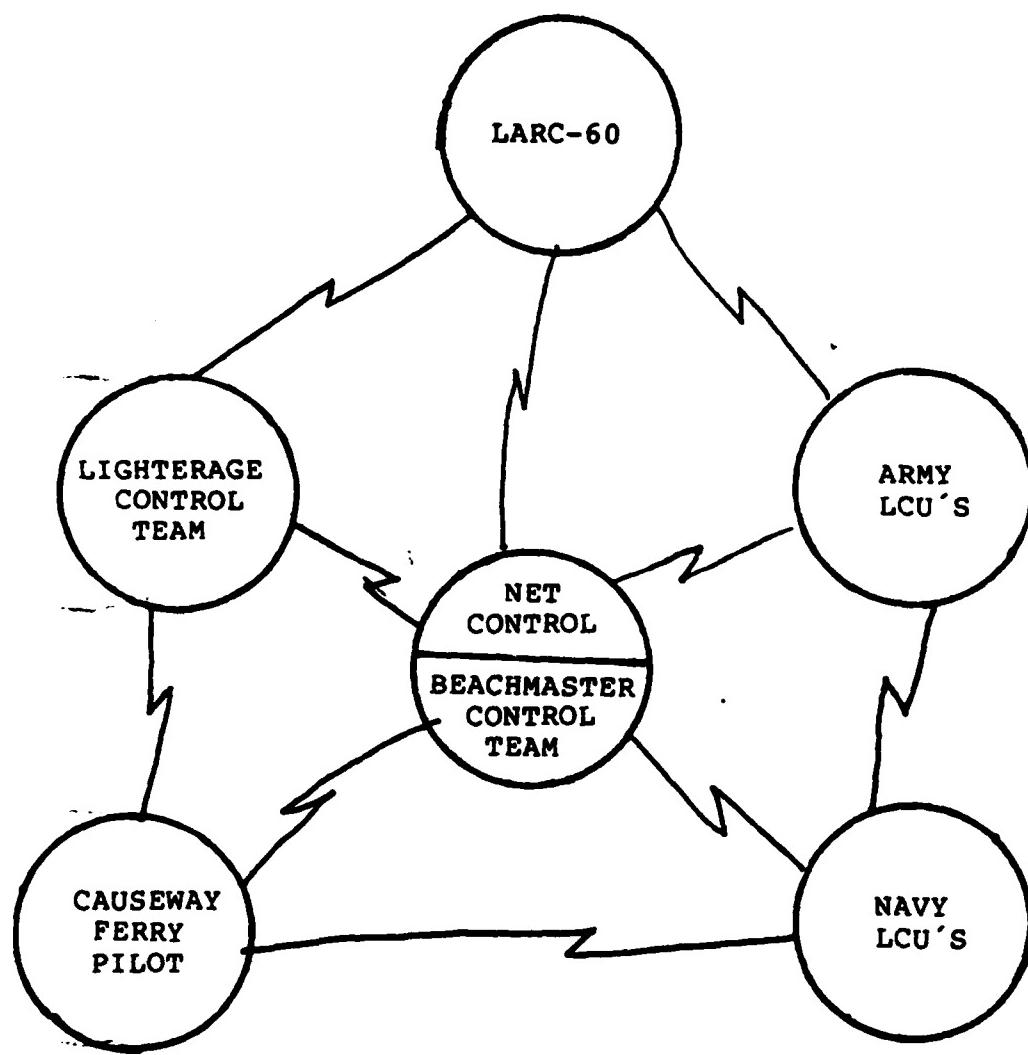
EMBARKATION TEAM

**APPENDIX 3 (LIGHTER CONTROL TEAM RADIO NET) TO ANNEX B (COMMUNICATIONS PLAN) TO PHASE II ROLL-ON/ROLL-OFF FIELD TEST PLAN**



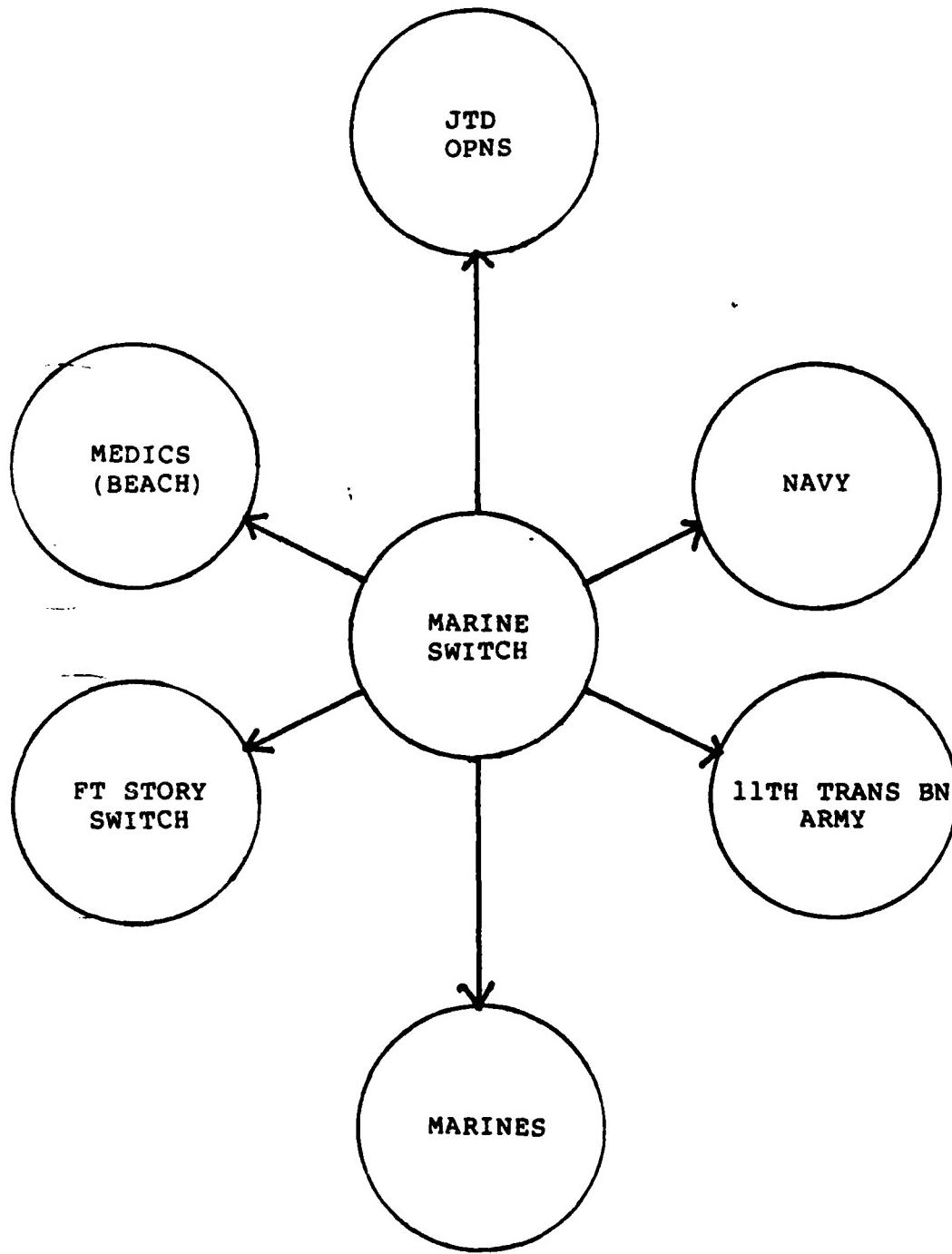
**LIGHTERAGE CONTROL TEAM**

APPENDIX 4 (BEACH CONTROL TEAM RADIO NET) TO ANNEX B (COMMUNICATIONS)  
TO PHASE II ROLL-ON/ROLL-OFF FIELD TEST PLAN

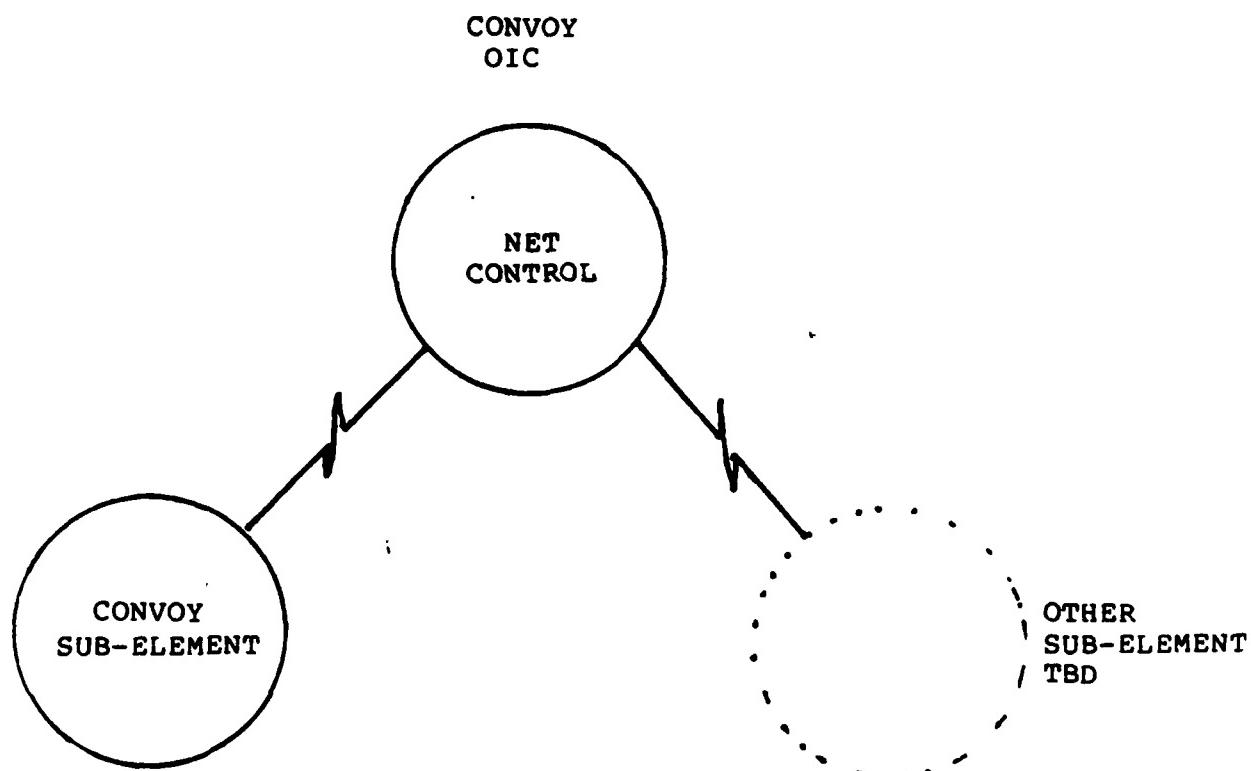


BEACH CONTROL TEAM

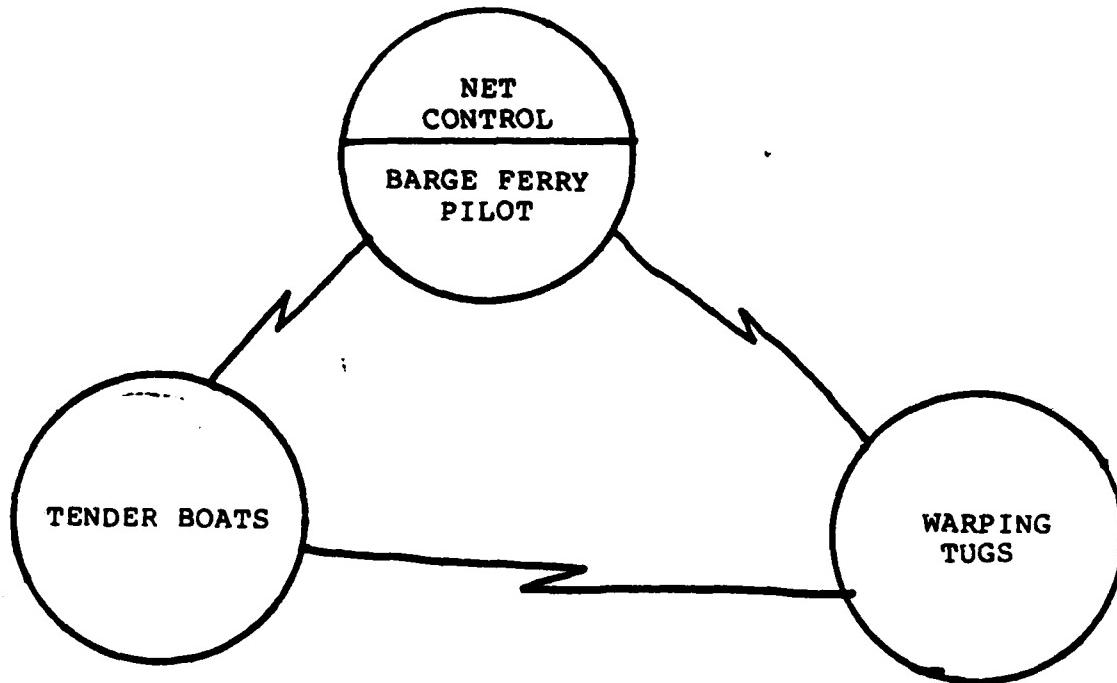
APPENDIX 5 (JTD OPERATIONS TELEPHONE TRAFFIC DIAGRAM) TO ANNEX B  
(COMMUNICATIONS) TO PHASE II ROLL-ON/ROLL-OFF FIELD TEST PLAN



APPENDIX 6 (CONVOY RADIO NET) TO ANNEX B (COMMUNICATIONS) TO PHASE II  
ROLL-ON/ROLL-OFF FIELD TEST PLAN



APPENDIX 7 (CAUSEWAY FERRY MANEUVERING NETS) TO ANNEX B  
(COMMUNICATIONS) TO PHASE II ROLL-ON/ROLL-OFF FIELD TEST PLAN



**ANNEX C ROLL-ON/ROLL-OFF FIELD TEST PLAN**

**SELECTED TEST VEHICLE LIST**

**MARINE CORPS VEHICLES**

NOMENCLATURE	WEIGHT EMPTY POUNDS	OVERALL L X W X H INCHES	TOTAL SQ FT	TOTAL CU FT	QUANTITY
M54 A2C, 5-Ton Truck TPM D 1050	20,660	315 X 110 X 117	227	2210	16*
M813 A1, 5-Ton Truck WN TPM D 1059	22,144	323 X 115 X 116	213	2068	16*
M123 A1C, 10-Ton Truck, Tractor, TPM D 1140	30,082	290 X 129 X 111	260	2386	1
MK48, (DVS), Dragon Wagon, Front Power Unit, TPM D 0209	23,863	230 X 106 X 109	169	1538	3
M52A2, 5-Ton Truck, Tractor TPM D 1130	18,430	273 X 126 X 109	227	2050	2
M543A2, 5-Ton Truck, Wrecker TPM D 1210	33,998	349 X 108 X 115	262	2486	2*
M816, 5-Ton Truck, Wrecker TPM D 1215	36,129	354 X 115 X 112	242	2300	2*
M886, 1 1/4-Ton Truck, Ambulance, TPM D 0915	6,115	224 X 91 X 103	150	1221	1
AN/TGG-37(V), Communication Central, TPM A 0268	24,368	372 X 108 X 99	279	2303	1
AN/MRC-138, Radio Set TPM A 1935	2,580	109X 84X 71	59	350	1
M198A1, 8-Ton Dolly, Trailer Converter, TPM D 0120	3,320	118 X 98 X 58	82	396	3
M127A2C, Semi-Trailer TPM D 0260	13,980	352 X 98 X 108	239	2145	1
NR-10, Mobile Air Conditioner	7,200	142 X 60 X 72	59	355	1
NR-5C, Mobile Air Conditioner	4,500	98 X 72 X 44	49	180	1
NP-2, Mobile Floodlight Set	2,000	90 X 60 X 60	43	213	1
NC-10B, Generator Set	6,500	116 X 60 X 44	48	177	1
ROPT-105-1, Compressor Unit	2,750	155 X 62 X 39	67	217	1
M35A2C, 2 1/2-Ton Truck, Cargo TPM D 1030	13,776	279 X 106 X 113	195	1829	2
M349A2,A3, 7 1/2-Ton Semi- Trailer, Van Refrigerator TPM D 0300	8,330	287 X 98 X 131	196	2133	1
M793, 65-Ton Semi-Trailer, Tank Transporter, TPM 0220	15,300	387 X 124 X 102	326	2767	2
M970, 5000 Gal, Semi-Trailer Refueler, TPM D 0215	16,060	368 X 96 X 105	235	2126	1
M870, 40-Ton Semi-Trailer, Lowbed, TPM D 0235	16,918	509 X 120 X 70	336	1680	1

ANNEX C FOLL-ON/FOLL-OFF FIELD TEST PLAN

SELECTED TEST VEHICLE LIST

MARINE CORPS VEHICLES

NOMENCLATURE	WEIGHT EMPTY POUNDS	OVERALL L X W X H INCHES	TOTAL SQ FT	TOTAL CU FT	QUANTITY
M118A1, 6-Ton Semi-Trailer Stake, TPM D 0250	6,230	281 X 96 X 102	188	1589	1
A265, Floodlight Set, TPM B 0630	2,680	147 X 74 X 69	76	435	1
4M032-11, Lubricating and Servicing Unit, TPM D 0190	5,610	174 X 96 X 78	118	758	1
IMS2, Welding Machine, Arc TPM B 2680	3,100	162 X 93 X 76	105	622	1
M416, 1/4-Ton, Trailer, Amphib, Cargo, TPM D 0840	580	109 X 62 X 44	47	212	1
SR4040, Road Grader TPM B 1081	30,420	239 X 96 X 138	220	2530	1
LHQ CON SWS PAL CON (Pzate can be Mounted on Trailer)	2,200	240 X 96 X 96	160	1280	1
NC-8A, Generator Set	5,880	112 X 58 X 45	45	169	1
A/S32K-1C, Loader, Air Launched Weapons	6,050	205 X 63 X 41	87	306	1
MC4000, Forklift, Rough Terrain, TPM B 2565	8,000	199 X 82 X 78	113	809	1
Lash and Yoke, TPM U 3060	48,000	420 X 96 X 120	280	2800	1
M198, Howitzer, Medium, Towed 155mm, TPM E 0655	15,750	496 X 111 X 117	224	1567	2
M109, Howitzer, Medium, SP 155mm, TPM E 0663	46,938	267 X 128 X 129	237	2544	1
DVTP-7, Landing Vehicle, Tracked, Personnel, TPM E 0845	52,148	313 X 129 X 123	279	2981	1
MC2500, 30-Ton, Crane, Rough Terrain, TPM B 0399	72,000	529 X 115 X 152	443	5715	1
72-31MP, Tractor, Rubber Tired, Terek, TPM B 2465	24,300	214 X 104 X 122	167	1297	1
82-30M, Tractor, Medium, Full Tracked, Terek, TPM B 2462	53,560	247 X 141 X 112	210	2503	2
Ripper Attachment for 82-30M Tractor, TPM B 1775	5,800	82 X 96 X 77	54	350	1
MC40DR, Excavator, Hydraulic, Multi-Purpose, Wheeled TPM B 0590	37,800	405 X 98 X 52	238	3028	1

ANNEX C ROLL-ON/ROLL-OFF FIELD TEST PLAN

SELECTED TEST VEHICLE LIST

MARINE CORPS VEHICLES

NOMENCLATURE	WEIGHT EMPTY POUNDS	OVERALL L X W X H INCHES	TOTAL SQ FT	TOTAL CU FT	QUANTITY
AVMSQ-95, Information, Coordination Central, Toe Lin K 82205 01	8,400	213 X 96 X 131	142	1551	1
TA-57B, Tractor, Aircraft Towing	10,000	124 X 66 X 38	576	180	1
A/S32A-30, (JG40PT-16), Tractor, Wheeled, Aircraft Ground Support Equipment, Towing	6,400	103 X 72 X 62	52	266	3
NAN-3, Nitrogen Servicing Unit	1,850	110 X 61 X 42	47	163	1
1581WF, 7 1/2-Ton Crane, Wheel Mtd, (Pettibone) TRM B 0445	28,300	312 X 96 X 108	215	2039	1
MMG-2, Generator Set, Electric Motor	2,680	78 X 44 X 40	24	79	1

Asterisks \* indicate either/or; depending on availability

**ANNEX C ROLL-ON/ROLL-OFF FIELD TEST PLAN**

**SELECTED TEST VEHICLE LIST**

**ARMY VEHICLES**

NOMENCLATURE	WEIGHT EMPTY POUNDS	OVERALL L X W X H INCHES	TOTAL SQ FT	TOTAL CU FT	QUANTITY
Crane Whl 20 Ton w/Boom	60860	527x128x149	468	5830	2
Crane Trk MID RWD 25 Ton	65800	458x123x117	391	3827	1
M818, 5-ton Tractor w/SILR Low Bed 22 1/2-ton	35887	494x96x124	330	3404	10
M818, 5-ton Tractor w/Semi- trailer Flat Bed	33420	635x110x124	486	5013	19
M818, 5-ton Tractor w/SILR Van RPR PT SILR	35967	467x94x132	305	3354	1
M818, 5-ton Tractor w/SILR Van Supply 12-ton	35407	488x96x139	326	3769	1
M818, 5-ton Tractor w/Shop Equip Trk Mid (OMU-5)	27942	357x93x112	231	2152	4
M818, 5-ton Tractor w/Shop Equip SILR Mid	39434	471x96x129	314	3376	1
M818, 5-ton Tractor w/Shop Equip SILR Mid	47147	492x98x128	335	3572	1
M818, 5-ton Tractor w/Shop Set Acft SILR Mid	39097	472x96x134	315	3514	1
Truck Pck RT 5-ton	36315	342x100x131	237	2605	2
Trk Tractor 6x6	26890	299x122x144	253	3052	1
Tractor FIRAC LSDED	53160	232x135x138	217	2507	1
Tractor Whl IND (OCE JD-410)	15160	284x89x140	175	2062	1
Trk Lift Pck RT 5-ton	33000	276x107x134	198	2303	2
Trk Lift Pck WKR 5-ton	33874	360x115x135	287	3247	1
Trk Wrecker 5-ton	34820	354x114x112	280	2644	1
Cavalry Fight Veh M3	43274	258x126x117	226	2201	1
CBT Eng Veh FIRAC	110560	353x146x128	358	3817	2

Carrier 107MM Mort	20260	191x113x98	150	1229	2
Howitzer Bv SP 8 inch	57630	297x124x108	256	2296	1
Recovery Veh FIFRC	107600	321x135x127	301	3185	1
Trk Lift Pck DED RT	113160	412x240x166	687	9499	1
Tank Transporter (Bridge Launch) (M18-A5)	90425	467x144x94	467	3658	1
Tank Transporter (Bridge Launch) (M60)	97200	461x144x101	761	3880	1

**STAGING AND LOAD PLANS**

**ANNEX D**

**TO BE PUBLISHED**

ANNEX E PHASE II FIELD TEST PLAN

LIGHTERAGE AND BEACHEAD PHYSICAL PLAN

I. GENERAL

A. Purpose - The purpose of this Annex is to provide information regarding the physical layout of anchorages, boat lanes, vehicle traffic patterns and staging areas at Fort Story.

B. Scope - Information provided in this Annex is limited to physical layout and anticipated land use. Procedures and guidance for the operational control of lighters and vehicles is contained in Annex A.

II. ANCHORAGE AREA AND BOAT TRANSIT LANES

A. Anchorage Area - The RO/RO ships are expected to anchor in the vicinity of Naval Anchorages LA-1 and LA-14 as shown in Figure E-1 and NOAA Chart 12254. The approximate center of anchorage will be LAT 36 56 51"N, LONG 76 03'14"W. This area

will minimize the length of transit for lighters to Blue Beach while insuring 40 feet of water at the anchorage and remaining clear of restricted areas noted on NOAA Chart 12254.

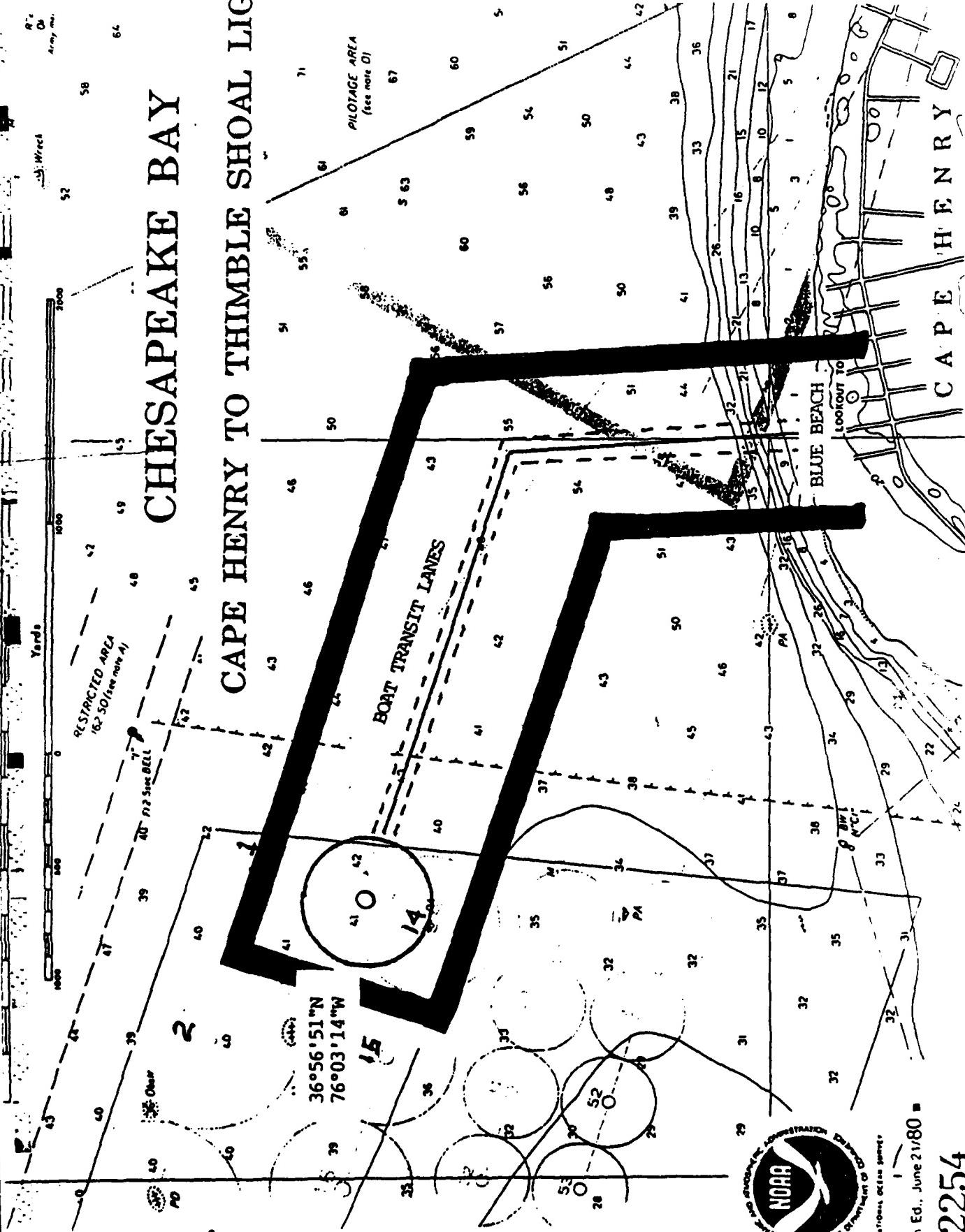
B. Boat Transit Lanes - Boat transit lanes shall be established as shown in Figure E-1. The turning point for approaching the beach shall be at least one-half mile from the surf zone to allow proper use of range markers in making the beach. Landings will require precise location due to the necessity of beach roadway preparation, discussed below.

### III. BEACH LANDING SITES

A. Primary Landing Sites - The primary landing area shown in Figure E-2 has been designed to allow three possible landing sites. Site B will have a four section causeway pier permanently installed and will be used exclusively for LCU marriages at the pier. Sites A and C will be utilized for either causeway ferry landings or LCU marriages to causeway piers depending on the test event scheduled at the time. Landing sites are separated by only 300 feet, so coxswains and craftmasters will be expected to use great care when operating in their boat lanes.

# CHESAPEAKE BAY

## CAPE HENRY TO THIMBLE SHOAL LIGHT



29th Ed., June 21, 1980.

12254

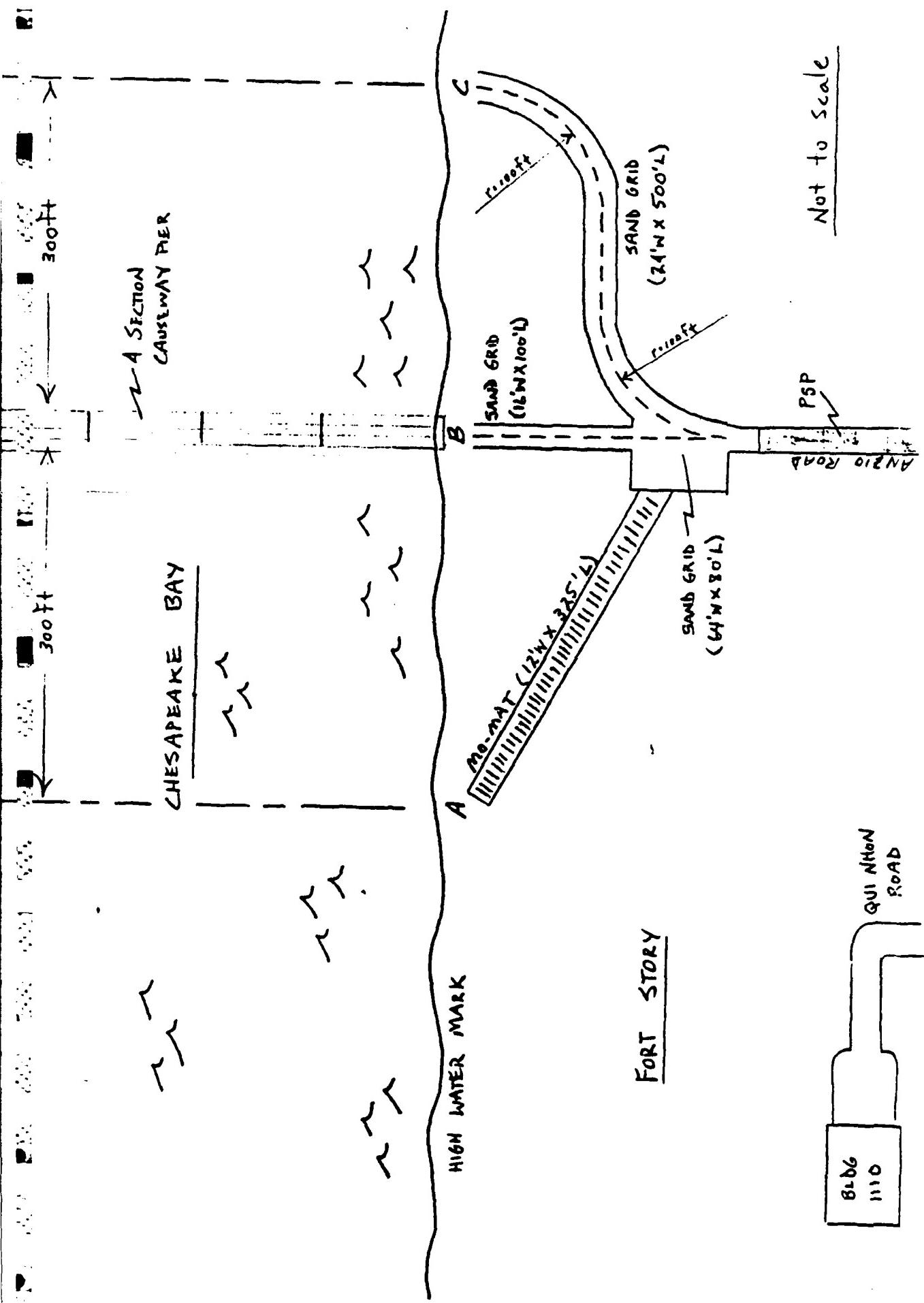


Figure F-2 PRIMA WHICH LANGUAGE STYLES

B. Alternate Landing Sites - A detailed beach survey will be conducted by the Navy just prior to the test. If this survey indicates the presence of sand bars that preclude use of the primary landing sites, alternate landing sites will be established similar to Figure E-3.

IV. BEACH ROAD IMPROVEMENT

Two types of road improvement will be utilized during this test; MO-MAT and the newly developed Army Sand Grid System.

A. MO-MAT - MO-MAT is an assault trackway designed to facilitate ground mobility by converting impassible terrain such as mud and sand to surface conditions capable of supporting the operation of wheeled vehicles, helicopters, and light aircraft. MO-MAT is a fiber-glass reinforced material that is normally supplied in installation kits with the following specifications:

**Panel**

Length ..... 48 ft 6 in.  
Width ..... 13 ft 2 in.  
Thickness (Overall) ..... 5/8 in.  
Rolled Diameter ..... 36 in. ID; 39 in. OD  
Weight ..... 600 lb

Storage Temperature ..... -60 to 155 F  
(-51.1 to 68.3 C)

Operating Temperature..... -65 to 135 F  
(53.9 to 57.2 C)

Operating Load .. ..... 50,000 lb gross (max)  
per vehicle with 70  
psi (max) tire  
pressure

Installation and maintenance of MO-MAT is in accordance with USMC  
Technical Manual MO-MAT (Assault Trackway) Kits (USMC ID 06831A)  
or other appropriate service publications.

The total MO-MAT requirement for the RO/RO test is anticipated to be between 4 and 16 rolls depending upon final landing site selection. MO-MAT will be provided, installed and maintained by the U.S. Army.

B. Sand Grid System - The Sand Grid System is a trafficability project developed by the Geotechnical Laboratory, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. This developmental system utilizes plastic "accordion - like" grids which are 8' x 20' when expanded and have hundreds of small cells which are filled with sand. The sand that is confined within the plastic grid cells is then stabilized with a single coat of asphalt to provide a roadway for wheeled vehicle traffic. Installation and maintenance of the Sand Grid System will be administratively accomplished by U.S. Army troops prior to the test under the direction of the developing laboratory.

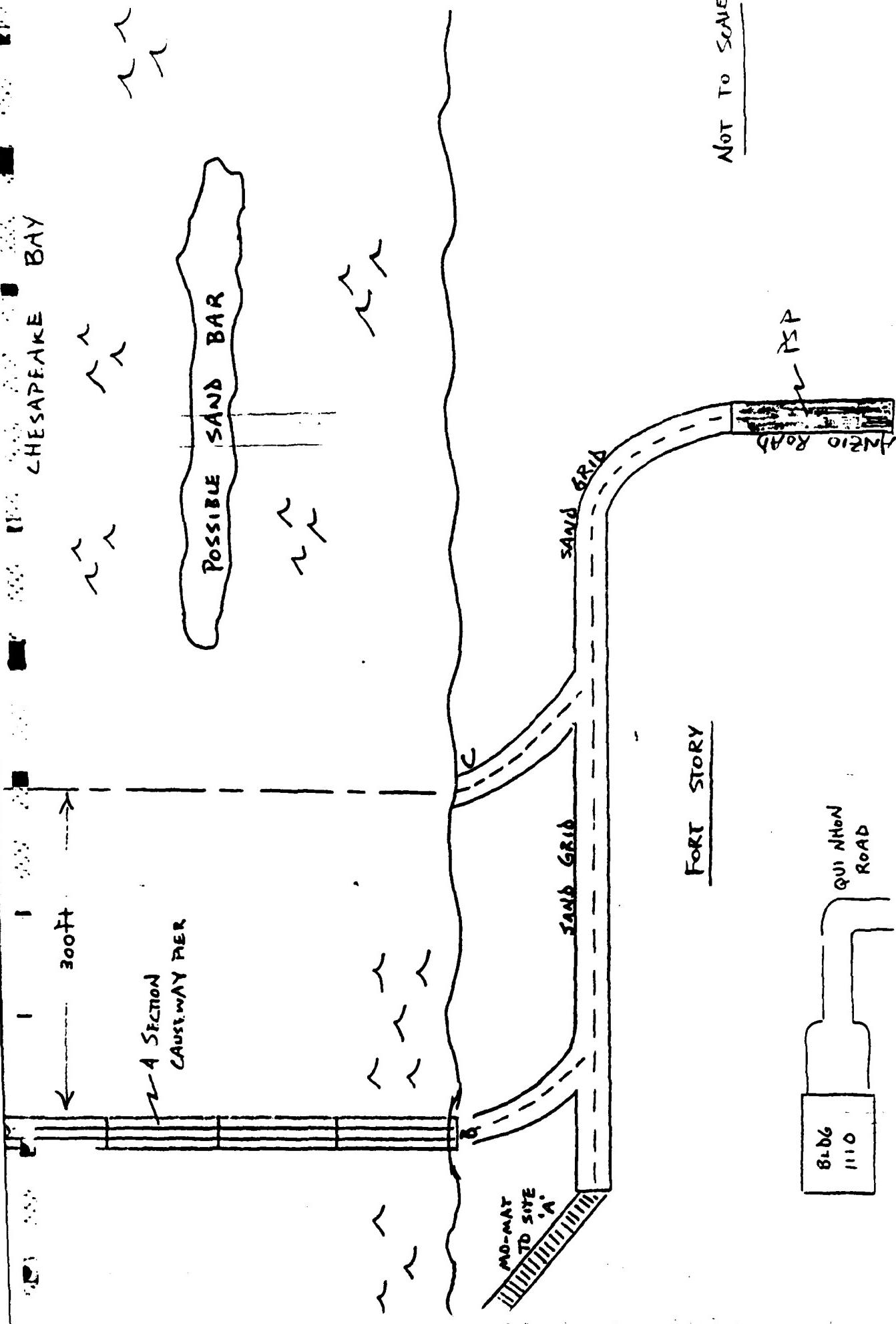


Figure E-3 ALTERNATIVE BEACH LANDING SITES

V. VEHICLE STAGING AND TRANSIT AT FORT STORY

A. Tracked Vehicles - Tracked vehicles will be staged in designated areas on Blue Beach. Tracked vehicles will not travel on the installed beach roads but will remain on the sand at all times. The exact location of staging areas for Tracked vehicles will be designated by the Joint Control Group in conjunction with the installation of the beach road improvements.

B. Wheeled Vehicles - Wheeled vehicles will be staged in a designated portion of the Cargo Staging Area on Fort Story and transit as indicated in Figure E-4.

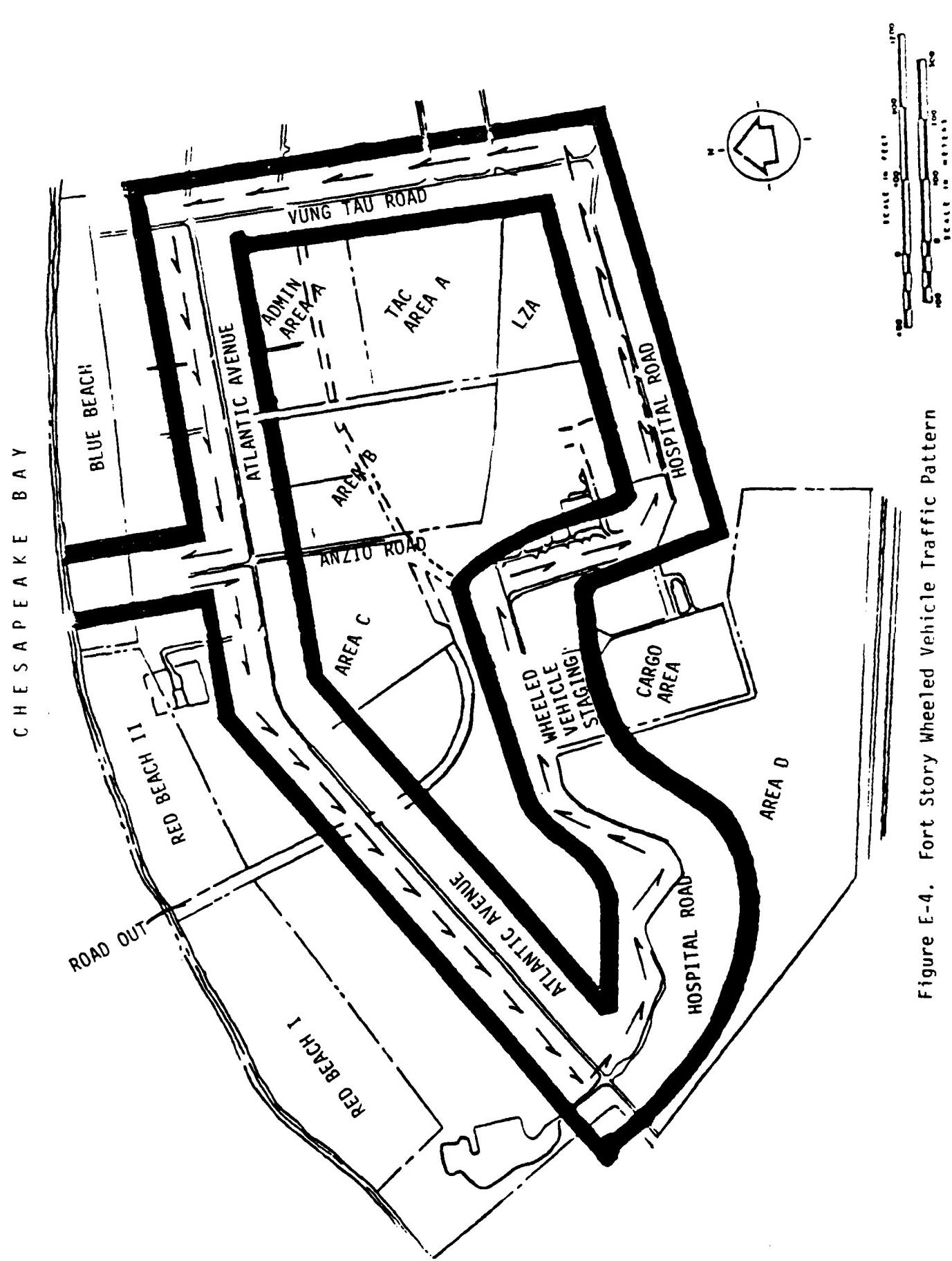


Figure E-4. Fort Story Wheeled Vehicle Traffic Pattern

ANNEX F

VISITORS AND PUBLIC AFFAIRS BUREAU

I. PURPOSE

This Annex provides general guidance for the joint organization and operation of the Visitors and Public Affairs Bureau for the Phase II JLOTS II test.

II. GENERAL

Visitor administration and Public Affairs have been combined into one bureau for administrative efficiency and coordination. The officer in charge of the bureau and the Public Affairs Officer (PAO) will work together to provide visitors (VIP, press, technical, public) with an overview of the test purpose and operations. The bureau will be located at Ft. Story, Va. Exact location and telephones will be announced by separate message.

III. BUREAU ORGANIZATION

The following functions will be accomplished within the Visitors and Public Affairs Bureau:

**A. ADMINISTRATION**

Process and manage visit requests to insure that requests are answered expeditiously and OICs are aware of intended visits. Additionally, this section will maintain the bureau's records and provide secretarial, protocol, and reproduction service for visitor matters and the PAO.

**B. BRIEFING TEAM**

Present information briefings to visitors. Briefings will include an overview of JLLOTS II as well as the specific test operations currently underway. Escort officers will be briefed prior to their assignment to insure they are familiar with current test operations. Safety of visitors will be emphasized in all briefings.

**C. ESCORT OFFICERS**

Escort officers will be provided for senior military and civilian officials visiting the test site. Escort officers will assist visiting dignitaries as directed by the OIC of the Visitors and Public Affairs Bureau. Assignment of escort officers will be a responsibility of the JTD Plans and Operations Office.

D. TRANSPORTATION

Transportation for visitors at the test site will be coordinated through the Visitors Bureau. A variety of vehicles to include a LARC LX will be used to transport personnel from briefing areas to actual test sites onshore and offshore.

E. PUBLIC AFFAIRS

Press releases will be prepared and provided to press representatives with a schedule for press days and general visiting. A test brochure for use by all visitors will be prepared and distributed by the Visitors Bureau.

IV. VISITOR SAFETY

It is desired that visitors be permitted to view all test operations. For the safety of visitors, their movements must be controlled by assigned escorts. Special care must be exercised to avoid visitors being placed in unsafe situations, i.e. under suspended loads, in proximity of moving craft and machinery, in the bights of lines, or close to cables which are under tension. In general visitors will not be permitted on the offloading platform or on the RO/RO ships. Observation of these locations will be made from a LARC LX.

ANNEX G ROLL-ON/ROLL-OFF FIELD TEST PLAN

ADMINISTRATION/LOGISTICS

I. GENERAL

A. Purpose - The purpose of this annex is to provide procedures and guidance to participating units to obtain administrative and/or logistical support during the JLOTS II Roll-On/Roll-Off test.

B. Scope - The supplies, services, and facilities discussed herein pertain only to those supplies, services and facilities provided by or on Fort Story, VA. The focal point for support provided by Fort Story is the Directorate of Plans, Training and Security (DPTSEC), Fort Eustis, Virginia. Details regarding locations and hours of operation are in Appendix 1 to this Annex.

C. Responsibilities - The provisioning of the necessary administrative/logistic services to conduct operations is an inherent command responsibility. As such, commanders of participating units will be prepared to provide such services or make prior arrangements with local commands in the Ft. Story/Eustis or Little Creek/Norfolk area. The JLOTS II, Joint Test Directorate will assist in coordinating admin/logistics services when necessary.

## **II. SUPPLIES**

**A. Fuel** - The Fort Story Transportation Motor Pool and the 11th Transportation Battalion have facilities for limited retail distribution of MOGAS and diesel fuel. Units requiring fuel from these facilities must make prior arrangements with DPTSEC, Fort Eustis POC. Requesting unit should provide an estimate of the amount of fuel required and necessary funding data.

**B. Subsistence** - Request for subsistence support from U.S. Army sources will be coordinated in advance with DPTSEC, Fort Eustis POC. Requesting units should be prepared to arrange funds transfer at time of coordination.

**C. Troop Support** - An Army, Air Force Exchange Service (PX) outlet is located on Fort Story, Building T-603.

## **III. SERVICES**

**A. Transportation** - There are no known transportation requirements for Fort Story to provide to participating units. Transportation support required by the JTD are identified in the Army Outline Test Plan (OTP). These assets are needed to support the JTD staff and data collector personnel.

B. Maintenance - The Fort Story Consolidated Maintenance Office (CMO) has a limited capability to provide minor wheel vehicle maintenance services. Units desiring use of CMO services must make prior coordination with DPTSEC, Fort Eustis POC.

C. Medical - Fort Story operates a medical dispensary during normal duty hours (0730-0900) at building T-638. Emergency ambulance service to Boone Clinic, NAB, Little Creek is available after normal duty hours. If participating units desire to use this dispensary for sick call or related support, arrangements should be coordinated in advance with DPTSEC, Fort Eustis.

D. Sanitation/Hygiene - Portable latrines are available from Fort Story. Participating units should coordinate total requirements and proposed locations of portable latrines with the Fort Eustis DPTSEC, POC prior to arrival at Fort Story.

E. Postal - A Post Office is available on Fort Story. Unit Postal Officers should arrange for pick-up of unit mail with Post Office officials.

**IV. FACILITIES**

**A. Beach - Blue Beach and Red Beach I & II are available for use by participating units.**

**B. Billeting - Limited billeting facilities are available on Fort Story. Units desiring billeting should contact Fort Eustis DPTSEC POC.**

**C . Bivouac - Administrative Bivouac facilities are available at Admin Area A. Direct coordination with the Operations Officer, Fort Story is authorized for use of these facilities.**

**D. Messing - A Company size Mess Hall (bldg T-1016) is available. Cold Storage facilities are also available on Fort Story. Coordination for their use should be made with Fort Eustis DPTSEC POC.**

**E. Vehicle Staging Area - The North-West quarter of the Fort Story Cargo Area will be the vehicle Staging area for Phase II, JLOTS II.**

**F. Vehicle Wash Rack - The vehicle wash rack located in the vicinity of building T-1012 is available for use by participating units.**

V. COORDINATION POINTS OF CONTACT

A. JLOTS II, Joint Test Directorate - Major Hagans, AV 680-7360, commerical (804) 464-7548.

Mailing address: Headquarters, Joint Logistics Over-The-Shore, Naval Amphibious Base, Little Creek, VA 23521.

Message address: HQ JLOTS II LITTLE CREEK VA

B. Fort Eustis, DPTSEC - Major W. Wiebe -AV-927-5897/3326 commercial (804) 878-5897/3326.

Mailing address: Commander USATCFE Attn: ATZF-O Fort Eustis, VA 23604

Message address: CDR USATCF FT EUSTIS VA//ATSP-DPT-O//

C. Fort Story Operations - Major Watts - AV 927-9164 commercial 422-7164.

Mailing address: Commander USA Ft Story Attn: ATZF-FS-OP Fort Story, VA 23459

Message address: CDR FT STORY VA

D. COMNAVSURFLANT - LTCOL Puckett - AV 690-5960 commercial (804) 444-5960.

Mailing address: Commamnder Naval Surface Force, U. S. Atlantic Fleet, Norfolk, VA 23511

Message address: COMNAVSURFLANT NORFOLK VA

E. FMFLANT - LTCOL Miller - AV 690-6637 commercial (804) 444-6637.

Mailing address: Commanding General Fleet Marine Force, Atlantic Attn: G4 Norfolk, VA 23511

Message address: CG FMFLANT NORFOLK VA

APPENDIX 1 TO ANNEX G, JLOTS II FIELD TEST PLAN  
FORT STORY ACTIVITIES

Barber Shop Bldg 603: Phone 422-7027 Mon 1100-1730 Tues Closed Wed-Fri 1100-1730	Community Services Ctr (continued) Legal Assistance Lawyer Thur 0900-1530
Bowling Alley Bldg 1080: Phone 422-7412/7084 Mon-Fri 110-2300 Sat & Sun/Holidays 1400-2200	Notary Public Powers of Attorney, Claims Mon-Fri 0730-1630
Chaplain Bldg 500: Phone 422-7552/7665	Dental Clinic Bldg 638: Phone 422- 7077/7067/7641
Catholic Service Sun 0900 Wed 1130	Military Sick Call Mon-Fri 0730-0900
Protestant Service Sun 1100	Emergency Sick Call for Dependents Mon-Fri 1230-1300
Clothing Sales Store Bldg 603: Phone 422-7622 Mon 1130-1730 Tues Closed Wed-Fri 1130-1700 Sat & Sun 1100-1700	Appointment Only Mon-Fri 0900-1600 Emergencies Mon-Fri
Commissary Bldg T505: Phone 422-7646/7636 Closed Sun, Mon and Holidays Tues-Fri 1130-1730 Sat 1000-1600	Dispensary Bldg 638: Phone 422-7802/7822
Community Services Center Bldg 564: Phone 422-7311	Mon-Fri 0900-1600
Army Community Services/ Army Emergency Relief Mon-Fri 0730-1630	Military Sick Call Mon-Fri 0730-0900
Drug/Alcohol Abuse Ctr Mon-Fri 0730-1630 (Except Thurs)	Dependent Sick Call Mon-Fri 1000-1100
	Emergencies-Mon-Fri
	Finance & Accounting Bldg 523: Phone 422-7514/7656 Mon-Fri 0730-1600
	Gymnasium Bldg 1078: Phone 422-7975/7052 Mon-Fri 0600-2130 Sat & Sun 0930-1800 Holidays 1300-1700

**NCO Club**  
Bldg 586: Phone 422-7405  
Office Tues, Wed-Fri 0800-1600

Main Club (Tues-Fri)  
Breakfast 0700-1000

Bar Hours: Phone 428-2418  
Wed 1700-2100 (Happy Hr 1700-1900)  
Thur 1700-2300 (Happy Hr 1700-1800)  
Fri 1700-0200 (Happy Hr 1700-1900)  
Sat 1200-0200 (Disco 2200-0200)

Beach House (Seasonal)  
Sun-Sat 1100-2100  
(Beach Music Sun 1700-2100)  
Lunch Sun-Sat 1100-1900

**Officers Club**  
Bldg 1102: Phone 425-6631/6632  
422-7558/7385

Office: Tue-Fri 0830-1600  
Bar Wed & Thur 1700-2200  
Fri 1700-2400  
Sat 1700-2300  
Sun 1000-1400

**Dining**  
Lunch - Everyone Welcome  
Tue-Fri 1130-1300  
Sun 1000-1400 (Brunch)

Patio Party (Seasonal)  
Sun 1800-2300  
Fri 2000-0100

**Package Store**  
Bldg 563: Phone 422-7863  
Tue-Fri 1100-1900  
Sat 1000-1800

**Post Exchange**  
Bldg 603: Phone 422-7858  
Mon 1130-1730/Closed Tue  
Wed-Fri 1130-1730  
Sat & Sun 1100-1700

**Post Office**  
Bldg 565: Phone 422-7816  
Mon-Fri 0930-1330  
EOM/Mid Mo Payday Hrs 0930-1430

Sandpiper Recreation Ctr  
Bldg 720: Phone 422-7472  
Mon-Fri 1200-2200  
Sat & Sun/Holidays 1300-2200

Free Movies  
Sun/Wed/Fri 1900  
Tennis courts  
Everyday 0800-2200

Virginia National Bank  
Bldg 523: Phone 422-7571  
Mon-Fri 0900-1400  
Army paydays 0900-1530